

# South American Cables.

1891—1892.

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Repairs, 1893.

---

*Presented by*

The India Rubber, Gutta Percha, and Telegraph Works  
Company, Limited.

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Mathew Gray Esq<sup>r</sup>  
Lessness Park  
Abbey Wood  
Kent.  
Aug. 23<sup>rd</sup> 1894

# South American Cables,

1891—1892.

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## INDEX.

	PAGE
Mechanical particulars of Cable ....	3
Dates of manufacture of Cable ....	11
Distribution of Cable on board ....	15
Factory Lengths of Sections and Shipped Lengths ....	16
Loading of Ship ....	17
Paying out and Picking up Drum Co-efficients ....	21
Mileage Table for Light Deep Sea Type....	24
List of Staff, Officers, Cable Hands, and Crew ....	27
Paying out and Sounding Watches ....	30
Synopsis of Voyage ....	33

### ENGINEER'S GENERAL DIARY, 1891.

Sounding between Pernambuco and Fernando Noronha ....	41
At Fernando Noronha ....	49
Sounding between Fernando Noronha and Senegal ....	53
At Dakar, and sounding between Dakar and St. Louis ....	73
At St. Louis ....	77
LANDING AND LAYING SHORE-END AND HEAVY INTERMEDIATE AT ST. LOUIS ....	81

### ENGINEER'S GENERAL DIARY, 1892.

At Dakar ....	91
Sounding between Dakar and St. Louis ....	95
PAYING OUT HEAVY AND LIGHT INTERMEDIATE AND HEAVY DEEP SEA AT ST. LOUIS ....	99
At St. Louis and Dakar ....	115
Sounding between Senegal and Fernando Noronha ....	119
At Fernando Noronha ....	135
Steaming to Pernambuco ....	139
Sounding off Pernambuco ....	143
Sounding between Pernambuco and Bahia ....	151
At Bahia ....	157
Sounding off Maceio and Cape Agostinho ....	167
At Bahia ....	181
Steaming to Rio de Janeiro ....	191
Steaming from Rio to Pernambuco ....	197

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# *Index.*

	PAGE
At Pernambuco. Landing Hut and Stores. Transferring Cable to	
Lighter. Coaling ....	205
LANDING PERNAMBUCO SHORE END ....	221
Sounding between Pernambuco and Fernando Noronha ....	227
At Fernando Noronha ....	235
Sounding off Fernando Noronha ....	241
LANDING FERNANDO NORONHA SHORE END AND BUOYING HEAVY	
DEEP SEA ....	247
Steaming to Pernambuco ....	259
PAYING OUT FROM PERNAMBUCO AND SLIPPING FINAL BIGHT OFF	
FERNANDO NORONHA ....	265
Steaming to Pernambuco ....	313
Particulars of Cable picked up off Fernando, and expenditure of same	316
Steaming from Pernambuco to Bahia. At Bahia. Coaling ....	321
Steaming from Bahia to Pernambuco ....	329
At Fernando Noronha ....	337
LANDING FERNANDO SHORE END ....	343
PAYING OUT FROM FERNANDO TOWARDS ST. LOUIS. SLIPPING	
FINAL BIGHT OFF ST. LOUIS ....	347
Details of Cable expended ....	468
Summary of Cable expended ....	472
Cable on board after completion of Cables ...	475
POSITION SHEETS. PERNAMBUCO—FERNANDO NORONHA SECTION...	480
"            "            FERNANDO NORONHA—ST. LOUIS SECTION ....	484
ELECTRICAL REPORT ....	495
NOTES ON SOUNDINGS, WITH CHART OF CONTOUR LINES ROUND	
FERNANDO NORONHA ....	579
MAP OF FERNANDO NORONHA ....	581
NOTES ON FERNANDO NORONHA ....	583
VIEWS OF ISLAND ....	597
REPAIRS TO ST. LOUIS—FERNANDO NORONHA	
SECTION, 1893.	
Engineer's Report ....	605
Engineer's Log ....	635
Electrical Report ....	691



# South American Cables.

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MECHANICAL PARTICULARS OF CABLE.

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## DESCRIPTION OF CABLE.

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### FOR THE PERNAMBUCO—FERNANDO DE NORONHA SECTION (INDIA RUBBER CORE).

#### Shore End type No. 2146.

*Core*:—A strand of seven copper wires tinned =  $\cdot 0415''$ , weighing 225 lbs. per N.M., insulated with No. 30 india rubber weighing 225 lbs. per N.M., then taped with a spiral cotton tape coated with india rubber, the whole then vulcanized. The core served with tanned jute.

*Inner sheathing*:—Fourteen galvanized iron wires (No. 8 L.S.W.G.) =  $\cdot 1595''$  dia., weight of wire = 52.04 cwts. Length of lay =  $12\frac{1}{4}''$ . Served with jute yarn prepared in compound.

*Outer sheathing*:—Fourteen galvanized iron wires (No. 1 L.S.W.G.) =  $\cdot 2987''$  dia., weight of wire = 183.6 cwts. Length of lay = 19''. Served with two coats of prepared jute yarn and two coats of compound.

Diameter =  $1.988''$  Circumference =  $6.245''$ . Cubic contents per N.M. = 133.7 c. ft. Weight wet in air = 14.38 tons. Weight in sea water = 10.68 tons. Specific gravity = 4.14. Breaking strain = 33.5 tons. Modulus of tension = 3.1 N.M.

#### Heavy Intermediate type No. 2145.

*Core*:—Same as above, served with tanned jute.

*Sheathing*:—Twelve galvanized iron wires (No. 3 L.S.W.G.) =  $\cdot 2518''$  dia. Weight of wire =  $112\frac{1}{2}$  cwt. Length of lay = 15''. Served with two coats of prepared jute yarn and two coats of compound.

Diameter =  $1.58''$ . Circumference =  $4.95''$ . Cubic contents per N.M. = 82.2 c. ft. Weight wet in air = 7.76 tons. Weight in sea water = 5.35 tons. Specific gravity = 3.2. Breaking strain = 17.1 tons. Modulus of tension = 3.2 N.M.

*Description of Cable.*

S.S. "SILVERTOWN."

INDIA RUBBER CORE—*contd.*

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**Light Intermediate type No. 2144.**

*Core*:—Same as above, served with tanned jute.

*Sheathing*:—Twelve galvanized iron wires (No. 6 L.S.W.G.)=  
·1937" dia. Weight of wire=65·73 cwts. Length of lay=  
12 $\frac{7}{8}$ ". Served with two tapes and two coats of compound.

Diameter=1·14". Circumference=3·57". Cubic contents  
per N.M.=41·0 c. ft. Weight wet in air=4·30 tons. Weight  
in sea water=3·12 tons. Specific gravity=3·65. Breaking  
strain=9·85 tons. Modulus of tension=3·1 N.M.

**Heavy Deep Sea type No. 2143.**

*Core*:—Same as above, served with tanned jute.

*Sheathing*:—Twelve galvanized iron wires (No. 8 L.S.W.G.)=  
·1595" dia. Weight of wire=44·39 cwts. Length of lay=  
11 $\frac{1}{8}$ ". Served with two tapes and two coats of compound.

Diameter=·975" Circumference=3·06". Cubic contents  
per N.M.=32·3 c. ft. Weight wet in air=3·02 tons. Weight  
in sea water=2·14 tons. Specific gravity=3·75. Breaking  
strain=7·2 tons. Modulus of tension=3·14 N.M.

**Light Deep Sea type No. 2083.**

*Core*:—Same as above, served with tanned jute.

*Sheathing*:—Sixteen galvanized steel wires (No. 13 L.S.W.G.)=  
·09177" dia. Weight of wire=19·99 cwts. Length of lay=  
11·04". Each wire compounded and taped. Served with  
tape, prepared hemp cords, and two compounds.

Diameter=1·04". Circumference=3·28". Cubic contents  
per N.M.=37·3 c. ft. Weight wet in air=2·15 tons. Weight  
in sea water=1·14 tons. Specific gravity=2·15. Breaking  
strain=9 $\frac{5}{8}$  to 10 $\frac{5}{8}$  tons, without or with cords respectively.  
Modulus of tension=9·4 N.M.

NOTE.—The sheathing wires in all types except the Light Deep Sea  
are pickled in compound.

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*Description of Cable.*  
S.S. "SILVERTOWN."

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FOR THE SENEGAL—FERNANDO DE  
NORONHA SECTION (GUTTA PERCHA CORE).

**Shore End type No. 2151.**

*Core*:—A strand of seven copper wires= $\cdot 0415''$ , weighing 225 lbs. per N.M., insulated with gutta percha, weighing 225 lbs. per N.M. The core served with tanned jute.

*Inner sheathing*:—Fourteen galvanized iron wires (No. 8 L.S.W.G.)= $\cdot 1595''$  dia. Weight of wire= $52\cdot 04$  cwts. Length of lay= $12\frac{1}{4}''$ . Served with jute yarn prepared in compound.

*Outer sheathing*:—Fourteen galvanized iron wires (No. 1 L.S.W.G.)= $\cdot 2987''$  dia. Weight of wire= $183\cdot 6$  cwts. Length of lay= $19''$ . Served with two coats of prepared jute yarn and two coats of compound.

Diameter= $1\cdot 988''$ . Circumference= $6\cdot 245''$ . Cubic contents per N.M.= $133\cdot 7$  c. ft. Weight wet in air= $14\cdot 30$  tons. Weight in sea water= $10\cdot 67$  tons. Specific gravity= $4\cdot 14$ . Breaking strain= $33\cdot 5$  tons. Modulus of tension= $3\cdot 1$  N.M

**Heavy Intermediate type No. 2150.**

*Core*:—Same as above, served with tanned jute.

*Sheathing*:—Twelve galvanized iron wires (No. 3 L.S.W.G.)= $\cdot 2518''$  dia. Weight of wire= $112\frac{1}{2}$  cwts. Length of lay= $15''$ . Served with two coats of prepared jute and two coats of compound.

Diameter= $1\cdot 58''$ . Circumference= $4\cdot 95''$ . Cubic contents per N.M.= $82\cdot 5$  c. ft. Weight wet in air= $7\cdot 50$  tons. Weight in sea water= $5\cdot 10$  tons. Specific gravity= $3\cdot 16$ . Breaking strain= $17\cdot 1$  tons. Modulus of tension= $3\cdot 2$  N.M.

**Light Intermediate type No. 2149.**

*Core*:—Same as above, served with tanned jute.

*Sheathing*:—Twelve galvanized iron wires (No. 6 L.S.W.G.)= $\cdot 1937''$  dia. Weight of wire= $65\cdot 73$  cwts. Length of lay= $12\frac{7}{8}''$ . Served with two tapes and two coats of compound.

Diameter= $1\cdot 10''$ . Circumference= $3\cdot 45''$ . Cubic contents per N.M.= $40\cdot 2$  c. ft. Weight wet in air= $4\cdot 06$  tons. Weight in sea water= $2\cdot 95$  tons. Specific gravity= $3\cdot 6$ . Breaking strain= $9\cdot 85$  tons. Modulus of tension= $3\cdot 1$  N.M.

**Heavy Deep Sea type No. 2148.**

*Core*:—Same as above, served with tanned jute.

*Sheathing*:—Twelve galvanized iron wires (No. 8 L.S.W.G.)= $\cdot 1595''$  dia. Weight of wire= $44\cdot 39$  cwts. Length of lay= $11\frac{1}{8}''$ . Served with two tapes and two coats of compound.

Diameter= $1\cdot 031''$ . Circumference= $3\cdot 24''$ . Cubic contents per N.M.= $35\cdot 3$  c. ft. Weight wet in air= $3\cdot 22$  tons. Weight in sea water= $2\cdot 26$  tons. Specific gravity= $3\cdot 35$ . Breaking strain= $7\cdot 2$  tons. Modulus of tension= $3\cdot 14$  N.M.

**Light Deep Sea type No. 2147.**

*Core*:—Same as above with tanned jute.

*Sheathing*:—Sixteen steel wires (No. 13 L.S.W.G.)= $\cdot 0918''$  dia. Weight of wire= $19\cdot 7$  cwt. Length of lay= $11\cdot 04''$ . Each wire compounded and taped. Served with tape, prepared hemp cords, and two compounds.

Diameter= $1\cdot 04''$ . Circumference= $3\cdot 28''$ . Cubic contents per N.M.= $35\cdot 9$  c. ft. Weight wet in air= $2\cdot 16$  tons. Weight in sea water= $1\cdot 12$  tons. Specific gravity= $2\cdot 10$ . Breaking strain  $9\frac{5}{8}$  to  $10\frac{5}{8}$  tons, without or with cords respectively. Modulus of tension= $9\cdot 4$  N.M.

NOTE.—The sheathing wires in all types except Light Deep Sea are pickled in compound.

*Description of Cable.*  
S.S. "SILVERTOWN."

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LAND-LINE CABLE FOR PERNAMBUCO,  
FERNANDO DE NORONHA, AND ST. LOUIS  
(INDIA RUBBER CORE).

**Type No. 2177.**

*Core*:—A strand of seven copper wires tinned, weighing 225 lbs. per N.M. insulated with india rubber to a diameter of  $\cdot 3175''$ , and weighing 225 lbs. per N.M. Coated with No. 1914 tape to a diameter of  $\cdot 3575''$  (tape 1" wide).

The core as above, served with tanned jute.

*Sheathing*:—Sixteen galvanized iron B.B. wires, each  $0\cdot 120''$  dia. (wire pickled in compound before being used). Served with two coats of tape and two coats of compound.

Estimated external diameter= $0\cdot 917''$ . Cubic capacity (estimated)= $27\cdot 92$  c. ft. per N.M.





SOUTH AMERICAN CABLES.

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DATES OF MANUFACTURE OF CABLE.

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# DATES OF MANUFACTURE OF CABLE.

## I. SENEGAL—FERNANDO DE NORONHA SECTION. GUTTA PERCHA CORE.

Factory Tank.	Type.	Factory No.	Section.	Length, N.M.	Date.	
					From	To
13	L.D.S.	2147	5	230·211	28.10.91	5.2.92
5	"	"	5A	144·137	18.2.92	5.4.92
5	"	"	6	236·308	29.10.91	5.2.92
14	"	"	7	220·351	23.10.91	16.2.92
6	"	"	7A	160·312	19.2.92	11.4.92
6	"	"	9A	234·912	11.11.91	6.2.92
7	"	"	9B	53·142	6.2.92	25.2.92
8	"	"	10	106·058	7.1.92	16.2.92
16	"	"	11A	232·230	5.11.91	9.2.92
16	"	"	11B	143·839	15.2.92	2.4.92
1	H.D.S.	2148	1	19·000	8.2.92	27.2.92
9	L.I.	2149	4C	17·500	31.3.92	7.4.92
10	H.I.	2150	4B	6·000	26.3.92	30.3.92
3	S.E.	2151	3A	1·500	29.1.92	29.1.92
TOTAL =				1805·500		

## II. FERNANDO DE NORONHA—PERNAMBUCO SECTION. INDIA RUBBER CORE.

Factory Tank.	Type.	Factory No.	Section.	Length, N.M.	Date.	
					From	To
7	L.D.S.	2083	9	178·616	8.8.91	5.12.91
8	"	"	11	124·384	3.9.91	29.10.91
2	H.D.S.	2143	2	21·000	15.10.91	28.11.91
2	L.I.	2144	2A	16·500	21.12.91	31.12.91
2	H.I.	2145	4A	8·000	12.12.91	18.12.91
3	S.E.	2146	3	8·500	2.12.91	27.1.92
TOTAL =				357·000		



S.S. "SILVERTOWN."

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DISTRIBUTION OF CABLE ON BOARD.

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FACTORY LENGTHS OF SECTIONS AND  
SHIPPED LENGTHS.

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LOADING OF SHIP.

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# S.S. "SILVERTOWN."

## FACTORY LENGTHS AND SHIPPED LENGTHS.

Type.	Factory No.	Section.	Factory Length.	Shipped Length, by drum measure- ment.
S.E.	2146	Pt. 3	1·500	1·533
"	"	Pt. 3	7·000	7·000
"	2151	3A	1·500	1·504
H.I.	2145	Pt. 4A	0·990	1·000
"	"	Pt. 4A	6·990	6·995
"	2150	Pt. 4B	5·000	5·024
"	"	Pt. 4B	0·990	0·990
L.I.	2144	Pt. 2A	1·490	1·493
"	2144	Pt. 2A	14·990	14·972
"	2149	Pt. 4C	1·490	1·499
"	2149	Pt. 4C	16·000	16·011
H.D.S.	2143	Pt. 2	2·990	2·992
"	2143	Pt. 2	17·986	18·002
"	2148	Pt. 1	1·990	1·969
"	2148	Pt. 1	16·990	17·005
L.D.S.	2083	11	124·366	124·467
"	"	9	178·602	178·620
"	2147	5 Pt. A	145·662	145·662
"	"	6	236·270	236·274
"	"	7 Pt. A	5·846	5·846
"	"	10 Pt. A	26·537	26·537
"	"	9A	234·879	234·821
"	"	11A	232·219	232·590
"	"	7A	160·298	160·458
"	"	5A	144·115	144·318
"	"	11B	143·828	144·026
"	"	7 Pt. B	214·459	214·439
"	"	10 Pt. B	79·510	79·582
"	"	9B	53·116	53·073
"	"	5 Pt. SP	80·064	80·064



# S.S. " SILVERTOWN."

## DISTRIBUTION OF WEIGHT IN SHIP ON LEAVING GREENHITHE.

						Tons.
Cable in fore tank	..	..	..	..	..	925·2
„ „ main tank	..	..	..	..	..	2010·4
„ „ after tank	..	..	..	..	..	2027·2
„ „ pockets	..	..	..	..	..	20·5
„ „ fore hold (on drums for land-lines)	..	..	..	..	..	18·5
Coal in fore hold	..	..	..	..	..	250·0
„ „ bunkers	..	..	..	..	..	684·0
Water in ballast tanks	..	..	..	..	..	—
Fresh water in fore fresh water tank	..	..	..	..	..	12·0
„ „ after	..	..	..	..	..	30·0
Spare anchors and ropes	..	..	..	..	..	7·5
Steward's stores	{	aft	18	}	tons	68·0
		amidships	50			
Boatswain's stores	..	..	..	..	..	2·0
Carpenter's stores	..	..	..	..	..	3·0
Extra chain cable	..	..	..	..	..	1·5
Cable stores	..	..	..	..	..	130·0
Cable huts (2)	..	..	..	..	..	6·0
Water in main boilers	..	..	..	..	..	80·0
„ „ cable tanks	..	..	..	..	..	nil.
Engine-room stores (aft)	..	..	..	..	..	7·0
Stores, &c., for S.A. Cable Co., forward	..	..	..	..	..	21·0
„ „ „ amidships	..	..	..	..	..	11·0
„ „ „ aft	..	..	..	..	..	nil.
						<hr/>
						6314·8
Deck machinery, spar deck, boats, &c.	..	..	..	..	..	183·0
						<hr/>
						<hr/>
						Total.. 6497·8 tons.
						<hr/>

Draught of ship { Forward 27' 0".  
Aft 30' 6".



SOUTH AMERICAN CABLES EXPEDITION.

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S.S. "SILVERTOWN."

---

PAYING OUT AND PICKING UP DRUM  
CO-EFFICIENTS.

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MILEAGE TABLE FOR LIGHT DEEP SEA  
TYPE.

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# S.S. "SILVERTOWN."

## CO-EFFICIENTS FOR PAYING OUT DRUM.

$$\text{Circumference of Drum} = 17' 8\frac{7}{2}'' = 17' \cdot 6849.$$

Type.	Factory No.	Circumference in inches	Length of 1 Rev. — feet.	Revs. per N.M.	Log.
Shore End .. ..	2146 & 2151	6·245	18·205	334·353	2·5242046
Heavy Intermediate	2145 & 2150	4·950	18·097	336·347	2·5267867
Light .. ..	2144	3·570	17·982	338·497	2·5295551
„ .. ..	2149	3·450	17·972	338·686	2·5297967
Heavy Deep Sea ..	2143	3·060	17·940	339·299	2·5305828
„ „ ..	2148	3·240	17·955	339·016	2·5302198
Light „ „ ..	2083 & 2147	3·280	17·958	338·953	2·5301392
Shore End .. ..	2060	6·500	18·227	333·962	2·5236971
Heavy Intermediate	2061	5·1875	18·117	335·979	2·5263121
Shore End .. ..	946	5·750	18·164	335·112	2·5251897
Heavy Intermediate	945	3·437	17·971	338·706	2·5298229
Light .. ..	944	2·937	17·929	339·493	2·5308310
Deep Sea .. ..	943	2·875	17·924	339·591	2·5309562
Light Intermediate	1178	2·949	17·930	339·474	2·5308068
Heavy .. ..	1179	3·518	17·978	338·579	2·5296599
„ Deep Sea B ..	1236	2·578	17·8997	340·060	2·5315562

At Sea, 5.5.92.

# S.S. "SILVERTOWN."

## CO-EFFICIENTS FOR STARBOARD PICKING UP DRUM.

$$\text{Circumference of Drum} = 17' 9\frac{1}{2}'' = 17' \cdot 8229.$$

Type.	Factory No.	Circum- ference in inches.	Length of 1 Rev. — feet.	Revs. per N.M.	Log.
Shore End .. ..	2146 and 2151	6'245	18'343	331'837	2'5209250
Heavy Intermediate	2145 and 2150	4'950	18'235	333'801	2'5234875
Light ..	2144	3'570	18'120	335'920	2'5262351
" .. ..	2149	3'450	18'110	336'105	2'5264748
Heavy Deep Sea ..	2143	3'060	18'078	336'709	2'5272549
" .. ..	2148	3'240	18'093	336'430	2'5268947
Light .. ..	2083 and 2147	3'280	18'096	336'368	2'5268147
Shore End .. ..	2060	6'500	18'3646	331'453	2'5204219
Heavy Intermediate	2061	5'1875	18'2552	333'439	2'5230164
Shore End .. ..	946	5'750	18'302	332'585	2'5219027
Heavy Intermediate	945	3'437	18'109	336'125	2'5265008
Light ..	944	2'937	18'068	336'900	2'5275012
Deep Sea .. ..	943	2'875	18'062	336'997	2'5276254
Light Intermediate	1178	2'949	18'069	336'882	2'5274772
Heavy ..	1179	3'518	18'116	336'000	2'5263389
" Deep Sea B..	1236	2'578	18'038	337'459	2'5282209
Grappling Rope, new, steel and manilla	3 × 3 × 4	6'140	18'334	331'996	2'5211322
Grappling Rope, old, steel and manilla	3 × 3 × 4	5'360	18'269	333'177	2'5226746
Grappling Rope, old, steel and hemp	3 × 3 × 4	4'980	18'238	333'755	2'5234279
Grappling Rope, old, steel and hemp	3 × 3 × 4	3'975	18'154	335'295	2'5254269
Buoy Rope, new, steel and manilla	4 × 4	3'860	18'144	335'472	2'5256562
Buoy Rope, old, steel and manilla	4 × 4	3'800	18'139	335'564	2'5257759
Buoy Rope, new, steel and manilla	3 × 3	2'700	18'048	337'269	2'5279761
Buoy Rope, old, steel, and manilla	3 × 3	2'950	18'069	336'880	2'5274751

At Sea, 5.5.92.

# S.S. "SILVERTOWN."

## CO-EFFICIENTS FOR PORT PICKING UP DRUM.

*Circumference of Drum = 17' 8 $\frac{7}{8}$ " = 17'7396.*

Type.	Factory No.	Circum- ference in inches.	Length of 1 Rev. — Feet.	Revs. per N.M.	Log.
Shore End .. ..	2146 and 2151	6'245	18'260	333'352	2'5229025
Heavy Intermediate	2145 and 2150	4'950	18'152	335'333	2'5254767
Light .. ..	2144	3'570	18'037	337'471	2'5282369
" .. ..	2149	3'450	18'027	337'653	2'5284777
Heavy Deep Sea ..	2143	3'060	17'994	338'268	2'5292614
" .. ..	2148	3'240	18'009	337'987	2'5288995
Light .. ..	2083 and 2147	3'280	18'013	337'924	2'5288192
Shore End .. ..	2060	6'500	18'281	332'963	2'5223960
Heavy Intermediate	2061	5'1875	18'172	334'968	2'5250033
Shore End .. ..	946	5'750	18'219	334'106	2'5238846
Heavy Intermediate	945	3'437	18'026	337'679	2'5285039
Light .. ..	944	2'937	17'984	338'461	2'5295089
Deep Sea .. ..	943	2'875	17'979	338'558	2'5296337
Light Intermediate	1178	2'949	17'985	338'442	2'5294847
Heavy .. ..	1179	3'518	18'033	337'553	2'5283413
" Deep Sea B..	1236	2'578	17'954	339'025	2'5302319
Grappling Rope, new, steel and manilla	3 x 3 x 4	6'140	18'251	333'511	2'5231106
Grappling Rope, old, steel and manilla	3 x 3 x 4	5'360	18'186	334'703	2'5246600
Grappling Rope, old, steel and hemp	3 x 3 x 4	4'980	18'155	335'287	2'5254169
Grappling Rope, old, steel and hemp	3 x 3 x 4	3'975	18'071	336'841	2'5274251
Buoy Rope, new, steel and manilla	4 x 4	3'860	18'061	337'020	2'5276554
Buoy Rope, old steel, and manilla	4 x 4	3'800	18'056	337'113	2'5277756
Buoy Rope, new, steel and manilla	3 x 3	2'700	17'965	338'833	2'5299861
Buoy Rope, old, steel and manilla	3 x 3	2'950	17'985	338'441	2'5294827

At Sea, 5.5.92.

# S.S. "SILVERTOWN.

## MILEAGE TABLE FOR LIGHT DEEP SEA CABLE, No. 2147, AND HEAVY DEEP SEA, No. 2148.

Revs. per min.	Knots per hour.	Revs. per min.	Knots per hour.	Revs. per min.	Knots per hour.
1	·177	21	3·717	41	7·257
2	·354	22	3·894	42	7·434
3	·531	23	4·071	43	7·611
4	·708	24	4·248	44	7·788
5	·885	25	4·425	45	7·965
6	1·062	26	4·602	46	8·142
7	1·239	27	4·779	47	8·319
8	1·416	28	4·956	48	8·496
9	1·593	29	5·133	49	8·673
10	1·770	30	5·310	50	8·850
11	1·947	31	5·487	51	9·027
12	2·124	32	5·664	52	9·204
13	2·301	33	5·841	53	9·381
14	2·478	34	6·018	54	9·558
15	2·655	35	6·195	55	9·735
16	2·832	36	6·372	56	9·912
17	3·009	37	6·549	57	10·089
18	3·186	38	6·726	58	10·266
19	3·363	39	6·903	59	10·443
20	3·540	40	7·080	60	10·620

At Sea, 9.5.92.



SOUTH AMERICAN CABLES EXPEDITION.

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S.S. "SILVERTOWN."

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LIST OF STAFF OFFICERS, CABLE HANDS,  
AND CREW.

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PAYING-OUT WATCHES.

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SOUNDING WATCHES.

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## S.S. " SILVERTOWN."

### LIST OF STAFF AND VISITORS.

- |   |                         |  |                       |
|---|-------------------------|--|-----------------------|
| 1.  | Mr. M. H. Gray,         | Engineer-in-Chief  | (Left ship 17/6/92)   |
| 2.  | " H. Benest,            | Engineer.  |                       |
| 3.  | " F. W. Robinson,       | Assistant Engineer.  |                       |
| 4.  | " P. Bates,             | "  |                       |
| 5.  | " H. P. Daley,          | Secretary and Accountant.  |                       |
| 6.  | " T. E. Rymer-Jones,    | Assistant  | "                     |
| 7.  | " C. R. Wylie,          | "  | "                     |
| 8.  | " R. S. Lloyd,          | Hydrographer.  |                       |
| 9.  | " A. Fletcher,          | Assistant  | "                     |
| 10.   | " E. March-Webb,        | Chief Electrician.   |                       |
| 11.   | " J. Rymer-Jones,       | Electrician  |                       |
|   |                         | (Joined ship 17/6/92; left at Tenerife, 18/9/92).  |                       |
| 12.   | " H. E. Cann,           | Assistant Electrician.   |                       |
| 13.   | " J. Schneider,         | Assistant Electrician.   |                       |
|   |                         | (Left at Fernando Noronha, 31/8/92).   |                       |
| 14.   | " A. P. Crouch,         | Assistant Electrician.   |                       |
|   |                         | (Left at St. Louis, 13/5/92).  |                       |
| 15.   | " F. W. Knight,         | Assistant Electrician.   |                       |
|   |                         | (Left at Tenerife, 18/9/92).   |                       |
| 16.   | " J. F. Lumsden,        | Assistant Electrician.   | (Left ship, 15/7/92). |
| 17.   | " P. C. Willmott-Dixon, | Assistant Electrician.   |                       |
|   |                         | (Left at Fernando Noronha, 7/8/92).  |                       |
| 18.   | " C. Cazalet,           | Assistant Electrician.   |                       |
| 19.   | " W. A. Purdom,         | Electric Light Engineer.   |                       |
| 1.  | Mr. H. C. Forde.        | (Left ship 17/6/92).   |                       |
| 2.  | " W. Bent,              | } Messrs. Clark, Forde & Taylor's Staff,<br>representing the South American Cable Co.<br>(Joined ship on 3/6/92. |                       |
| 3.  | " H. B. Forde,          |  |                       |
| 4.  | " R. E. Peake.          |  |                       |
| 1.  | Mr. P. F. Anstruther,   | } South American Cable Co.'s Staff for<br>Fernando Noronha.  |                       |
| 2.  | " C. Barret,            |  |                       |
| 3.  | " C. R. Pratt,          |  |                       |
| 4.  | " P. H. Isley,          |  |                       |
| 5.  | " F. H. Morland,        |  |                       |
| 6.  | " T. J. Doyle,          |  |                       |
| (Mr. H. D. West, of South American Cable Co.'s Staff, joined ship on<br>30/7/92, for Fernando Noronha). |                         |  |                       |

LIST OF CABLE HANDS.

1. D. Smith, General Foreman.	22. R. Keys, Cable Hand.
2. T. Read, Foreman.	23. A. Young, "
3. W. Tillyer, Foreman.	24. W. Burrell, "
4. T. Knight, Storekeeper.	25. J. Dulling, "
5. C. Cakebread, Leading Hand.	26. J. Copp, "
6. B. Butcher, " "	27. A. Day (jun.) "
7. W. Wheeble, " "	28. W. Bobbitt, "
8. H. Grimes, " "	29. G. Armes, "
9. J. Brissenden, Lamp Trimmer.	30. J. Burgess, "
10. A. K. Brown, Carpenter.	31. E. Broome, "
11. D. Healey, "	32. C. Campbell, "
12. H. Livingstone, Fitter.	33. E. Ireland, "
13. R. Ritchie, "	34. J. Christian, "
14. J. Millar, Fitter's Mate.	35. R. Dann, "
15. F. Young, Blacksmith.	36. A. Jones, "
16. C. Cooper, Blacksmith's Mate	37. A. Day (sen.) "
17. R. Molt, Joiner.	38. M. Coleman, "
18. J. Gowing, Joiner's Mate.	39. W. Coleman, "
19. R. Schwartz, Elec. Lt. Driver.	40. W. Smith, "
20. C. J. Cakebread, Caterer.	41. A. Armes, "
21. C. Buckmaster, Cable Hand.	42. W. Armes, "

LIST OF OFFICERS AND CREW.

1. Mr. A. S. Thomson, Captain.	50. 1 Storekeeper.
2. " D. Morton, Chief Officer.	53. 3 Greasers.
3. " J. H. Iles, 2nd "	62. 9 Firemen.
4. " H. Boothby, " "	68. 6 Trimmers.
5. " B. C. Combe, 3rd "	70. 2 Cleaners.
6. " H. A. Cruthwell, Surgeon.	71. 1 Engineer's Steward.
7. " P. Gasnier, Carpenter.	72. Mr. O. Cook, Chief Steward.
8. " H. Bradley, Boatswain.	73. " J. Pereira, 2nd "
9. 1 Carpenter's Mate.	74. " A. Patrick, Storekeeper.
11. 2 Boatswain's Mates.	75. 1 Pantryman.
12. 1 Sailmaker.	76. Mr. R. Brownlie, Chief Cook.
13. 1 Lamp Trimmer.	78. 2 Bedroom Stewards.
17. 4 Quartermasters.	83. 5 Assistant Stewards.
40. 23 A.B.'s.	84. 1 2nd Cook.
41. 1 Officer's Servant.	85. 1 Butcher.
42. 1 Boy.	86. 1 Baker.
43. Mr. James Stoddart, Chief Engineer.	88. 2 Scullions.
44. " T. C. Bracegirdle, 2nd Engineer.	90. 2 2nd Class Cable Hand Stewards.
45. " W. Crosbie, 3rd Engineer	91. 1 3rd Class Cable Hand Steward.
46. " C. Ball, 4th "	92. 1 Captain's Servant.
47. " G. S. Barns, 5th "	93. 1 Stewards' Boy.
48. 1 Boilermaker.	94. 1 Assistant Pantryman.
49. 1 Donkeyman.	

# S.S. "SILVERTOWN."

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## SUMMARY OF PERSONS ON BOARD.

On leaving Greenhithe, 29/4/92.

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Staff and Visitors	..	..	..	..	27
Cable Hands ..	..	..	..	..	42
Officers and Crew	..	..	..	..	94
					<hr/>
TOTAL					<u>163</u>

# S.S. "SILVERTOWN."

## PAYING-OUT WATCHES.

### STARBOARD.

W. Tillyer.  
B. Butcher.  
H. Grimes.  
C. Buckmaster.  
J. Dulling.  
C. Campbell.  
M. Coleman.  
A. Jones.  
A. Day (jun.)  
G. Armes.  
J. Copp.  
J. Burrell.  
A. Armes.  
W. Coleman.  
A. K. Brown.  
F. Young.  
H. Livingstone.  
C. Cooper.  
J. Brissenden.  
1 O.S.

### D. Smith, General Foreman.

#### Over Tank.

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#### Leadsman.

Brakes.

#### „ Machinery.

#### „ Lamp Trimmer.

#### Messenger.

R. Schwartz, Electric Light Driver.

### PORT.

T. Read.  
C. Cakebread.  
W. Wheeble.  
R. Keys.  
R. Dann.  
E. Ireland.  
A. Day (sen.)  
J. Burgess.  
J. Christian.  
A. Young.  
W. Armes.  
W. Bobbitt.  
E. Broome.  
W. Smith.  
D. Healey.  
—  
R. Ritchie.  
J. Millar.  
T. Knight.  
1 O.S.

## SOUNDING WATCHES.

D. Smith, General Foreman (day work).

T. Read, Foreman } night work (if required).  
W. Tillyer, „ }

	No. 1.	No. 2.	No. 3.
Leading Hand	H. Grimes.	B. Butcher.	C. Cakebread.
Cable Hand	C. Buckmaster.	J. Dulling.	R. Keys.
„	A. Young.	R. Dann.	J. Christian.
„	G. Armes.	A. Jones.	C. Campbell.
Engine Driver	H. Livingstone.	R. Ritchie.	F. Young.
Lamp Trimmer	J. Brissenden.	T. Knight.	—

## BOATS' CREWS.

### STEAM LAUNCH.

Coxswain, H. Grimes.  
Driver, H. Livingstone.  
Bowman, A. Day (jun.)  
Stoker, J. Millar.

### GIG.

Leading Hand, W. Wheeble.  
Stroke, A. Day (sen.)  
No. 2, W. Bobbitt.  
„ 3, M. Coleman.  
„ 4, A. Armes.  
„ 5, W. Smith

SOUTH AMERICAN CABLES EXPEDITION.

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S.S. "SILVERTOWN."

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SYNOPSIS OF VOYAGE.

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## SYNOPSIS OF VOYAGE.

### S.S. "SILVERTOWN."

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#### ON HOMEWARD VOYAGE AFTER THE WESTERN AND BRAZILIAN EXPEDITION.

1891.	
Sept. 14th.	Left Pernambuco, sounding towards Fernando Noronha.
„ 18th.	Anchored off the Island of Fernando Noronha.
„ 20th.	Left Fernando Noronha, sounding towards Senegal.
Oct. 5th.	Anchored at Dakar.
„ „	Left Dakar, sounding towards St. Louis.
„ 6th.	Anchored off St. Louis.
„ 7th.	Commenced landing and laying the Shore End and Heavy Intermediate (india rubber core) for the St. Louis—Fernando Noronha Section.
„ 8th.	Buoyed end of Heavy Intermediate off St. Louis.
„ „	Left St. Louis for the Canary Islands.
1892.	
Apr. 26th.	Left factory for Greenhithe.

#### OUTWARD BOUND ON THE SOUTH AMERICAN CABLES EXPEDITION.

„ 29th.	Left Greenhithe for Tenerife, Canary Islands.
May 8th.	Arrived at, and left Santa Cruz de Tenerife.
„ 12th.	Arrived at Dakar
„ 14th.	Left Dakar for St. Louis, sounding <i>en route</i> .
„ 15th.	Arrived at St. Louis.
15th, 16th	Spliced on to St. Louis Heavy Intermediate, laid out the Heavy Deep Sea for the St. Louis—Fernando Noronha Section, and buoyed the end.

*Synopsis of Voyage—contd.*  
S.S. "SILVERTOWN."

1892.	
May 16th.	Left St. Louis for Dakar.
„ 17th.	Arrived at, and left Dakar for the Island of Fernando de Noronha, sounding <i>en route</i> .
„ 26th.	Arrived at Fernando Noronha Island.
„ 27th.	Left Fernando Noronha for Pernambuco.
„ 29th.	Arrived at Pernambuco.
June 3rd.	Left Pernambuco for Bahia. (From 31st May to 3rd June, sounding off Pernambuco.)
„ 6th.	Arrived at Bahia.
„ 18th.	Left Bahia to take soundings off the coast.
„ 28th.	Arrived at Bahia to await orders.
July 15th.	Left Bahia for Rio de Janeiro.
„ 19th.	Arrived at Rio de Janeiro.
„ 20th.	Left Rio de Janeiro for Pernambuco.
„ 26th.	Arrived at Pernambuco.
„ 29th.	Landed Shore End at Pernambuco for the Pernambuco—Fernando de Noronha Section.
„ 31st.	Left Pernambuco for Fernando Noronha, sounding <i>en route</i> .
Aug. 2nd.	Arrived at Fernando de Noronha.
5th & 6th.	Sounding off Fernando Noronha.
„ 7th.	Landed Fernando Noronha Shore End of the Fernando Noronha—Pernambuco Section, and left for Pernambuco.
„ 9th.	Arrived at Pernambuco.
„ 11th.	Left Pernambuco, paying out cable towards Fernando Noronha.
„ 14th.	Completed Pernambuco—Fernando Noronha Section and anchored off Fernando Noronha.

*Synopsis of Voyage—contd.*

S.S. "SILVERTOWN."

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1892.	
Aug. 15th.	Left Fernando Noronha.
„ 17th.	Arrived at Pernambuco, and left Pernambuco for Bahia.
„ 20th.	Arrived at Bahia and commenced coaling.
„ 24th.	Left Bahia for Pernambuco.
„ 27th.	Arrived at Pernambuco, and left Pernambuco for Fernando Noronha.
„ 29th.	Arrived at Fernando Noronha.
„ 30th.	Sounding off Fernando Noronha.
„ 31st.	Left Fernando Noronha, laying cable to Senegal.
Sept. 11th.	Completed Senegal—Fernando Noronha Section, and anchored off St. Louis.
„ 12th.	Left St. Louis for Santa Cruz de Tenerife.
„ 16th.	Arrived at Santa Cruz de Tenerife.
„ 18th.	Left Tenerife for London
„ 27th.	Arrived in Victoria Docks, London.



# South American Cables.

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ENGINEER'S GENERAL DIARY.

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S.S. " SILVERTOWN."

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ON HOMEWARD VOYAGE AFTER THE  
WESTERN AND BRAZILIAN EXPEDITION.

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SOUNDING BETWEEN PERNAMBUCO AND  
FERNANDO NORONHA.

---

S.S. "SILVERTOWN."

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SEPTEMBER 14TH TO SEPTEMBER 18TH, 1891.

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# SOUNDING BETWEEN PERNAMBUCO AND FERNANDO NORONHA.

S.S. "SILVERTOWN."

Hour.	MONDAY, SEPTEMBER 14TH, 1891.	
MIDNT.	Weighed anchor and left Pernambuco to take soundings towards Fernando Noronha.	
A.M.	TUESDAY, SEPTEMBER 15TH, 1891.	
1.5	Olinda Light bearing N 28 W, and Picao Light bearing N 55 W.	
3.48	Sounding { Lat. 8° 9'·1 S 1 S { Long. 34° 30'·0 W }	426 fms. n. sn
4.50	Sounding { Lat. 8° 6'·2 S 2 S { Long. 34° 27'·0 W }	444 fms. m. and s.
5.40	Sounding { Lat. 8° 6'·1 S 3 S { Long. 34° 22'·8 W }	551 fms. s. and m.
7.17	Sounding { Lat. 8° 2'·5 S 4 S { Long. 34° 19'·0 W }	552 fms. l. br. m. and s.
8.0	Light ESE breeze. Fine, but cloudy. Bar. 30·140 (78° F.). Temp. 77°·7 F. dry, 75° F. wet. Sea surface 77°·9 F.	
8.30	Sounding { Lat. 8° 2'·4 S 5 S { Long. 34° 13'·6 W }	573 fms. l. br. m. and s.
11.26	Sounding { Lat. 7° 44'·0 S 6 S { Long. 34° 13'·4 W }	1382 fms. n. sn.
NOON.	Moderate E'ly breeze. Fine and clear. Moderate ESE swell. Bar. 30·155 (79° F.). Temp. 78°·2 F. dry, 76°·2 F. wet. Sea surface 79° F.  Position by { Lat 7° 44'·0 S observations { Long. 34° 13'·4 W Current observed since 1.5 a.m. = N 42° E, 1·5 N.M. = 0·14 kt.	

## S.S. "SILVERTOWN."

Hour.	TUESDAY, SEPTEMBER 14TH, 1891— <i>contd.</i>	
P.M.		
1.22	Sounding { Lat. $7^{\circ} 51' \cdot 4$ S 7 S { Long. $34^{\circ} 14' \cdot 0$ W }	906 fms. m.
2.10	Sounding { Lat. $7^{\circ} 50' \cdot 6$ S 8 S { Long. $34^{\circ} 17' \cdot 5$ W }	526 fms. s.
3.55	Sounding { Lat. $7^{\circ} 43' \cdot 1$ S 9 S { Long. $34^{\circ} 12' \cdot 9$ W }	1511 fms. n. sn.
6.0	Sounding { Lat. $7^{\circ} 38' \cdot 9$ S 10 S { Long. $34^{\circ} 6' \cdot 5$ W }	2031 fms. n. sn.
	Current observed since noon = N $35^{\circ}$ W, 6.4 N.M. = 1.0 KT.	
8.0	Light ESE breeze. Fine, but cloudy. Moderate ESE swell. Bar. 30.115 (79° F.). Temp. 77°·5 F. dry, 75°·6 F. wet. Sea surface 78° F.	
8.24	T. Sounding { Lat. $7^{\circ} 30' \cdot 1$ S 11 S { Long. $34^{\circ} 12' \cdot 6$ W }	1920 fms. s. { Bottom temp. 35°·61 F. Surface temp 78°·0 F.
10.28	Sounding { Lat. $7^{\circ} 23' \cdot 6$ S 12 S { Long. $34^{\circ} 21' \cdot 5$ W }	723 fms. gy. m
	Telegraph Steamer "Mirror" about 4 miles to the N'd, apparently grappling for the Brazilian Submarine Company's Cable, which has broken down near this position.	
MIDNT.	Light E'ly breeze. Fine and clear.	

## WEDNESDAY, SEPTEMBER 16TH, 1891.

A.M.		
1.20	Sounding { Lat. $7^{\circ} 15' \cdot 5$ S 13 S { Long. $34^{\circ} 13' \cdot 6$ W }	$\overline{3095}$ fms.
	Lost 216 fathoms of wire and Sigsbee's tube.	
5.17	Sounding { Lat. $7^{\circ} 9' \cdot 6$ S 14 S { Long. $34^{\circ} 4' \cdot 9$ W }	2345 fms.
	Lost 164 fms. of wire and Sigsbee's tube	

## S.S. "SILVERTOWN."

Hour.	WEDNESDAY, SEPTEMBER 16TH, 1891— <i>contd.</i>
	In a first attempt to take this sounding the wire broke when about 1180 fms. were paid out. Lost 238 fms. of wire and a Sigsbee's tube.
A.M.	
5.34	Current observed since 6 p.m. yesterday, N 82° W, 5.7 N.M. = 0.5 KT.
7.53	Sounding { Lat. 6° 57'.7 S 15 S { Long. 34° 0'.0 W } 1876 fms. m. and s.
8.0	Moderate ESE breeze. Fine, but cloudy. Moderate swell. Bar. 30.115 (77° F.). Temp. 78°·3 F. dry, 76°·1 F. wet. Sea surface 78°·2 F.
10.2	Sounding { Lat. 6° 50'.7 S 16 S { Long. 33° 54'.4 W } 1492 fms. n. sn.
NOON.	Moderate E by S wind. Fine and clear. Moderate E'ly swell. Ship rolling considerably. Bar. 30.150 (79° F.). Temp. 79°·3 F. dry, 77°·3 F. wet. Sea surface 79° F. Position by { Lat. 6° 43'.8 S observations { Long. 33° 47'.5 W Current observed since 5.34 a.m. = N 43° W, 8.9 N.M. = 1.3 KTS.
P.M.	
0.14	Sounding { Lat. 6° 43'.8 S 17 S { Long. 33° 47'.5 W } 2287 fms. m. and s.
3.5 "	Sounding { Lat. 6° 37'.4 S 18 S { Long. 33° 37'.4 W } 2453 fms. cl. and s.
5.35	Sounding { Lat. 6° 26'.7 S 19 S { Long. 33° 32'.6 W } 2410 fms. m. and s.
8.0	Moderate E by S wind. Fine and clear. Moderate swell. Ship rolling. Bar. 30.115 (78° F.). Temp. 78°·2 F. dry, 77° F. wet. Sea surface 78°·5 F.
8.45	Sounding { Lat. 6° 12'.6 S 20 S { Long. 33° 29'.7 W } 2510 fms. ooze.
11.45	Sounding { Lat. 5° 57'.8 S 21 S { Long. 33° 23'.0 W } 2503 fms. ooze.
MIDNT.	Moderate ESE breeze. Fine, but overcast. Moderate SE sea and swell.

S.S. "SILVERTOWN."

Hour.	THURSDAY, SEPTEMBER 17TH, 1891.	
A.M.		
2.23	Sounding { Lat. 5° 46'·1 S 22 S { Long. 33° 30'·0 W }	2459 fms. cl.
5.27	Sounding { Lat. 5° 39'·0 S 23 S { Long. 33° 19'·9 W }	2517 fms. m. and s.
5.34	Current observed since noon yesterday=N 35° W, 12·3 N.M.=0·7 KT.	
7.0	As the morning sights place ship about 12 N.M. to the NW of position by dead reckoning, changed course from N 18 W to S 88 E, to run 17 miles for the required position to take sounding.	
8.0	Moderate ESE breeze. Fine and clear. Confused ESE and SE swell. Bar. 30·130 (78° F.). Temp. 78°·5 F. dry, 77°·1 F. wet. Sea surface 77°·9 F.	
10.9	T. Sounding { Lat. 5° 31'·5 S 24 S { Long. 33° 6'·0 W }	2537 fms. ooze. { Bottom temp. 32°·26 F. Surface temp. 78°·4 F.
NOON.	Moderate ESE breeze. Fine and clear. Moderate confused sea and swell. Bar. 30·100 (80° F.). Temp. 79°·2 F. dry, 73° F. wet. Sea surface 78° F. Position by { Lat. 5° 22'·9 S. observations { Long. 32° 59'·0 W. Current observed since 5.34 a.m.=S 83° W, 3·6 N.M.=0·6 KT.	
P.M.		
1.23	Sounding { Lat. 5° 21'·0 S 25 S { Long. 32° 58'·6 W }	2520 fms. n. sn.
	Some delay took place in taking this sounding owing to the wire breaking when 940 fms. were paid out. Lost 940 fms. of wire and one Benest's small tube.	
5.45	Sounding { Lat. 4° 51'·1 S 26 S { Long. 33° 1'·0 W }	2517 fms. m. and s.
6.32	Current observed since noon=N 26° W, 7·1 N.M.=1·1 KTS.	
8.0	Moderate SE by E wind. Fine and clear. Moderate ESE sea and swell. Bar. 30·030 (79° F.). Temp. 78°·3 F. dry, 75° F. wet. Sea surface 78°·2 F.	

*Sounding between Pernambuco and Fernando Noronha.*

S.S. "SILVERTOWN."

Hour.	THURSDAY, SEPTEMBER 17 <sup>TH</sup> , 1891— <i>contd.</i>	
P.M.		
8.58	Sounding { Lat. 4° 41'·6 S 27 S { Long. 32° 51'·3 W }	2533 fms. n. sn.
11.17	Sounding { Lat. 4° 30'·9 S 28 S { Long. 32° 53'·2 W }	2459 fms. s. m. and oz.
MIDNT.	Fresh ESE breeze. Fine, but cloudy. Moderate ESE sea and swell.	
FRIDAY, SEPTEMBER 18 <sup>TH</sup> , 1891.		
A.M.		
2.29	Sounding { Lat. 4° 24'·2 S 29 S { Long. 32° 41'·0 W }	2415 fms. n. sn.
5.3	Sounding { Lat. 4° 14'·0 S 30 S { Long. 32° 44'·3 W }	2401 fms. s. and m.
5.28	Current observed since 6.32 p.m. yesterday = N 14° E, 4·2 N.M. = 0·4 KT.	
6.10	As observations show that ship has been set to the NW, changed course from: N 60° E to S 77° E.	
6.30	Sighted the Island of Fernando Noronha.	
7.20	Pyramid Peak on Fernando Noronha bearing N 28° E.	
8.0	Moderate decreasing ESE breeze. Fine, but cloudy. Moderate ESE swell.	
	Bar. 30·110 (78° F.). Temp. 78°·5 F. dry, 75°·4 F. wet. Sea surface 78° F.	
8.17	Sounding { Lat. 4° 13'·5 S 31 S { Long. 32° 34'·5 W }	2375 fms. s. m.
10.36	Sounding { Lat. 4° 6'·0 S 32 S { Long. 32° 41'·5 W }	2267 fms. n. sn. Bottom part of tube adrift.
NOON.	Moderate ESE breeze. Fine and clear. Moderate sea and swell.	
	Bar. 30·100 (79° F.). Temp. 78°·5 F. dry, 74°·2 F. wet. Sea surface 78°·2 F.	
	Position by { Lat. 4° 2'·9 S observations { Long. 32° 37'·2 W } Peak on Fernando Noronha S, bearing N 38½° E.	
	Current observed since 5.28 a.m. = N 86° W, = 4·9 N.M. = 0·75 KT.	

S.S. "SILVERTOWN."

Hour.	FRIDAY, SEPTEMBER 18TH, 1891— <i>contd.</i>	
P.M. 0.54	Sounding { Lat. $4^{\circ} 2' 2''$ S 33 S { Long. $32^{\circ} 32' 7''$ W }	2032 fms. n. sn
	Fernando Noronha Peak bearing N $30\frac{3}{4}^{\circ}$ E, 14.0 N.M. distant.	
2.25	Sounding { Lat. $3^{\circ} 56' 1''$ S 34 S { Long. $32^{\circ} 33' 6''$ W }	{ 1269 fms. Lost 3 fms. of wire. Ther. "M," and 1 Benest's tube.
	Fernando Noronha Peak bearing N $54^{\circ}$ E, 10 N.M. distant.	

ON HOMEWARD VOYAGE AFTER THE  
WESTERN AND BRAZILIAN EXPEDITION.

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S.S. "SILVERTOWN."

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AT FERNANDO NORONHA.

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SEPTEMBER 18TH TO SEPTEMBER 20TH, 1891.

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# AT FERNANDO NORONHA.

## S.S. "SILVERTOWN."

Hour.	FRIDAY, SEPTEMBER 18TH, 1891— <i>contd.</i>
P.M.	
2.45	Set on for the anchorage off the Citadel of Fernando Noronha.
3.50	Hoisted signal, "‘Silvertown.’ I have passport."
4.50	Let go both anchors off the Citadel. Citadel bears S. 6° W.; 0·3½ N.M. distant.
5.6	Messrs. M. H. Gray, A. P. Crouch, and Captain Thomson left for shore to visit the Governor of the Island.
	Draught of ship { Forward 14' 6". Aft 22' 8".
8.0	Light SE winds. Fine and clear.
	Bar. 30·020 (78° F.). Temp. 77°·8 F. dry, 73°·5 F. wet. Sea surface 78°·1 F.
A.M.	SATURDAY, SEPTEMBER 19TH, 1891.
6.20	Messrs. M. H. Gray, A. Dearlove, H. Benest, and D. Barker left for shore, to select and examine a landing place for cable.
8.0	Moderate SE breeze. Fine, but cloudy.
	Bar. 30·100 (79° F.). Temp. 78° F. dry, 74° F. wet. Sea surface 78° F.
9.25	Shore leave given to staff.
11.20	Mr. Gray, accompanied by the Governor of Fernando Noronha and suite, came on board.
NOON.	Moderate SE breeze. Fine and clear.
	Bar. 30·100 (80° F.). Temp. 80° F. dry, 76°·2 F. wet. Sea surface 78°·5 F.
P.M.	
2.40	Mr. Crawford left to join Mr. Dearlove in taking soundings off the proposed cable landing place.

S.S. "SILVERTOWN."

Hour.	SATURDAY, SEPTEMBER 19TH, 1891— <i>contd.</i>
P.M.	
8.0	Light SE breeze. Fine, but cloudy.  Bar. 30.120 (78° F.). Temp. 78°·6 F. dry, 75°·5 F. wet. Sea surface 78° F.  While on shore to-day Mr. Gray selected a landing place for the cables in Peak Bay, and arranged site for cable house, which the Governor of the Island has undertaken to have erected.
A.M.	SUNDAY, SEPTEMBER 20TH, 1891.
8.0	Moderate S.E. breeze. Fine, but cloudy.  Bar. 30.140 (78° F.). Temp. 78° F. dry, 75°·5 F. wet. Sea surface 77°·8 F.
8.18	Mr. M. H. Gray left for shore to call on the Governor and to arrange for a letter to be sent to the Governor of the Province of Pernambuco asking for the necessary authorization for the erection of a cable house at Fernando Noronha.

ON HOMEWARD VOYAGE, AFTER THE WESTERN  
AND BRAZILIAN CABLES EXPEDITION.

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SOUNDING BETWEEN FERNANDO NORONHA  
AND SENEGAL.

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S.S. "SILVERTOWN."

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SEPTEMBER 20TH TO OCTOBER 4TH, 1891.

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# SOUNDING BETWEEN FERNANDO NORONHA AND SENEGAL.

S.S. "SILVERTOWN."

Hour.	SUNDAY, SEPTEMBER 20TH, 1891.
A.M.	
10.23	Weighed anchors and set on to take soundings towards Senegal.
11.22	Sounding { Lat. $3^{\circ} 49' 8''$ S 35 S { Long. $32^{\circ} 29' 0''$ W } 432 fms. sh. and crl. Bearings { Cape Placelliere bearing S 25 E. Peak bearing S 82 E.
NOON.	Moderate SE breeze. Fine, but overcast. Moderate SE sea. Ship rolling. Bar. 30.050 ( $80^{\circ}$ F.). Temp. $80^{\circ} 7$ F. dry, $78^{\circ} 2$ F. wet. Sea surface $77^{\circ} 6$ F.
P.M.	
0.10	Sounding { Lat. $3^{\circ} 51' 9''$ S 36 S { Long. $32^{\circ} 32' 2''$ W } 350 fms. n. sn. Peak bearing N $74^{\circ}$ E, 6.3 N.M. distant.
0.38	Sounding { Lat. $3^{\circ} 51' 0''$ S 37 S { Long. $32^{\circ} 33' 7''$ W } 464 fms. crl. Peak bearing N $85^{\circ}$ E, 8.3 N.M. distant.
1.46	Sounding { Lat. $3^{\circ} 52' 3''$ S 38 S { Long. $32^{\circ} 33' 3''$ W } 691 fms. h. n. sn. Peak bearing N $75^{\circ}$ E, 8.1 N.M. distant.
3.7	Sounding { Lat. $3^{\circ} 58' 0''$ S 39 S { Long. $32^{\circ} 34' 0''$ W } 1372 fms. crl. Peak bearing N $47^{\circ}$ E, 10.8 N.M. distant.
4.21	Sounding { Lat. $3^{\circ} 54' 9''$ S 40 S { Long. $32^{\circ} 30' 7''$ W } 1210 fms. n. sn. Peak bearing N $48^{\circ}$ E, 7.0 N.M. distant.
6.19	Sounding { Lat. $3^{\circ} 48' 0''$ S 41 S { Long. $32^{\circ} 25' 8''$ W } 36 fms. crl. Peak bearing S $7^{\circ}$ E and N extreme, Rat Island bearing S $81^{\circ}$ E.

*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

Hour.	SUNDAY, SEPTEMBER 20TH, 1891— <i>contd.</i>	
P.M.		
6.38	Sounding { Lat. $3^{\circ} 46' \cdot 8$ S 42 S { Long. $32^{\circ} 25' \cdot 5$ W }	235 fms. crl. Peak bearing S; N extreme Rat Island bearing S 63 E.
7.28	Sounding { Lat. $3^{\circ} 44' \cdot 9$ S 43 S { Long. $32^{\circ} 24' \cdot 1$ W }	384 fms. h. n. sn.
8.0	Fresh SE by S breeze. Fine and clear. Moderate SE sea and swell. Ship rolling. Bar. 30.100 (78° F.). Temp. 78°.4 F. dry, 75° F. wet. Sea surface 78° F.	
8.23	Sounding { Lat. $3^{\circ} 43' \cdot 9$ S 44 S { Long. $32^{\circ} 25' \cdot 4$ W }	1537 fms. n. sn.
9.52	Sounding { Lat. $3^{\circ} 40' \cdot 5$ S 45 S { Long. $32^{\circ} 26' \cdot 6$ W }	2089 fms. n. sn.
MIDNT.	Sounding { Lat. $3^{\circ} 35' \cdot 5$ S 46 S { Long. $32^{\circ} 17' \cdot 4$ W }	2300 fms. n. sn.

MONDAY, SEPTEMBER 21ST, 1891.

A.M.		
3.11	Sounding { Lat. $3^{\circ} 19' \cdot 8$ S 47 S { Long. $32^{\circ} 11' \cdot 4$ W }	2385 fms. grt. and oz.
5.9	Current observed since 6.30 p.m. yesterday = N 45 E, 9.2 N.M. = 0.8 KT.	
5.35	Sounding { Lat. $3^{\circ} 16' \cdot 1$ S 48 S { Long. $32^{\circ} 1' \cdot 2$ W }	2363 fms. n. sn.
7.56	Sounding { Lat. $3^{\circ} 15' \cdot 0$ S 49 S { Long. $31^{\circ} 51' \cdot 1$ W }	2383 fms. n. sn.
8.0	Moderate SE by E breeze. Fine, but overcast. Moderate SE swell. Bar. 30.150 (79° F.). Temp. 78°.3 F. dry, 75°.7 F. wet. Sea surface 78° F.	
10.25	Sounding { Lat. $3^{\circ} 8' \cdot 8$ S 50 S { Long. $31^{\circ} 40' \cdot 9$ W }	2407 fms. oz.
NOON.	Similar weather. Bar. 30.150 (81° F.). Temp. 78°.4 F. dry, 76°.7 F. wet. Sea surface 79°.2 F. Position by { Lat. $3^{\circ} 3' \cdot 4$ S observations { Long. $31^{\circ} 41' \cdot 1$ W Current observed since 5.9 a.m. = S 85 E, 3.6 N.M. = 0.5 KT.	

*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

Hour.	MONDAY, SEPTEMBER 21 <sup>ST</sup> , 1891— <i>contd.</i>	
P.M.		
1.5	Sounding { Lat. 2° 58'·8 S 51 S { Long. 31° 42'·4 W }	2441 fms. grt. cl.
3.21	Sounding { Lat. 2° 47'·5 S 52 S { Long. 31° 45'·8 W }	2432 fms. cl. and shl.
6.0	Current observed since noon = N 37 W, 5·1 N.M. = 0·85 kt.	
6.24	T. Sounding { Lat. 2° 40'·6 S 53 S { Long. 31° 34'·2 W }	2411 fms. { Bottom temp. 33°·15 F. Surface temp. 78°·2 F.
8.0	Moderate SE by E breeze. Fine, but cloudy, with rain. Moderate SE swell. Bar. 30·120 (78° F.). Temp. 78°·1 F. dry, 76°·5 F. wet. Sea surface 78°·1 F.	
9.36	Sounding { Lat. 2° 34'·6 S 54 S { Long. 31° 20'·9 W }	2459 fms. oz.
9.50	While heaving in the wire after taking Sounding No. 54, some ten or twelve teeth of the wooden cog-wheel of sounding machine carried away, entirely disabling the winding-in gear. Hove in the remainder of the wire, about 980 fms., by hand, and mechanics set about repairing cog-wheel.	
10.15	Set on at "half speed" for position to take Sounding No. 55.	
MIDNT.	Moderate SE breeze. Fine and clear. Moderate sea and swell.	
TUESDAY, SEPTEMBER 22 <sup>ND</sup> , 1891.		
A.M.		
1.0	In position for Sounding No. 55; but as the mechanics have not yet completed the repairs to the cog-wheel of sounding machine, reduced ship's engines to "dead slow," to keep ship's head to wind and current, till sounding machine is in working order again.	
3.35	Sounding machine now repaired.	
4.5	Sounding { Lat. 2° 21'·9 S 55 S { Long. 31° 14'·2 W }	2478 fms. cl. and sh.
6.15	Current observed since 6 p.m. yesterday = N 11 E, 4·9 N.M. = 0·4 kt.	

*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

Hour.	TUESDAY, SEPTEMBER 22 <sup>ND</sup> , 1891— <i>contd.</i>
A.M.	
6.40	Sounding { Lat. 2° 10' 0 S } 2532 fms. Lost 2298 fms. of 56 S { Long. 31° 14' 0 W } wire and 1 Benest's tube.
8.0	Fresh SE by S breeze. Fine, but cloudy. Moderate SE swell. Bar. 30·100 (78° F.). Temp. 77° F. dry, 76°·1 F. wet. Sea surface 78° F.
9.18	Sounding { Lat. 2° 8' 3 S } 2526 fms. n. sn. 57 S { Long. 31° 3' 1 W }
NOON.	Moderate ESE breeze. Fine and clear. Moderate ESE sea and swell. Bar. 30·095 (79° F.). Temp. 78°·2 F. dry, 76°·2 F. wet. Sea surface 78°·2 F.
	Position by { Lat. 2° 3' 7 S. observations { Long. 30° 48' 1 W.
P.M.	Current observed since 6.15 a.m. = S 38 E, 3·5 N.M. = 0·6 KT.
0.18	Stopped ship for the purpose of testing and comparing deep sea thermometers.
0.35	Commenced to lower the deep sea thermometers, marked "A," "H," and "J," attached to 3 × 3 buoy rope, with a 2-cwt. mushroom on the end of rope.
0.57	500 fms. of buoy rope paid out, attached deep sea thermometers marked "B," "K," and "O."
1.19	1000 fms. of buoy rope paid out, attached deep sea thermometers marked "C" and "N."
1.26	Sounding { Lat. 2° 2' 4 S } 2451 fms. sh. and cl. 58 S { Long. 30° 46' 2 W }
2.25	Stopped paying out on buoy rope, 2595 fms. of the rope below the surface of water.
2.35	Commenced to pick up buoy rope.
3.12	Buoy rope suddenly parted near the drum. Strain while picking up varying from 1·9 to 3·0 tons. Lost 1800 fms. of 3 × 3 buoy rope, 8 deep sea thermometers, and a 2-cwt. mushroom. On examining the broken end of rope (cut off and preserved) found that the wires were completely rusted through, and the manilla yarns entirely perished.
3 20	Set on for position to take Sounding No. 59.



*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

Hour.	TUESDAY, SEPTEMBER 22 <sup>ND</sup> , 1891— <i>contd.</i>	
P.M.		
5.19	Sounding { Lat. 1° 47'·3 S 59 S { Long. 30° 51'·7 W }	2666 fms. grt. m.
6.17	Current observed since noon = N 18 W, 8·5 N.M. = 1·4 KT.	
8.0	Moderate SE by E breeze. Fine and clear. Moderate SE swell. Bar. 30·100 (78° F.). Temp. 77°·9 F. dry, 76°·7 F. wet. Sea surface 78° F.	
8.48	Sounding { Lat. 1° 30'·3 S 60 S { Long. 30° 40'·1 W }	2691 fms. ooze.
11.55	Sounding { Lat. 1° 24'·7 S 61 S { Long. 30° 24'·3 W }	2639 fms. sh. and cl.
MIDNT.	Similar weather.	

WEDNESDAY, SEPTEMBER 23<sup>RD</sup>, 1891.

A.M.		
2.46	Sounding { Lat. 1° 9'·1 S 62 S { Long. 30° 24'·3 W }	2423 fms. sh. and cl.
5.10	Current observed since 6.17 p.m. yesterday = N 27 E, 9·3 N.M. = 0·84 KT.	
5.39	Sounding { Lat. 0° 53'·7 S 63 S { Long. 30° 23'·9 W }	2116 fms. glob. oz.
8.0	Moderate SE by E breeze. Fine, but overcast. Moderate SE swell. Bar. 30·040 (78° F.). Temp. 77°·9 F. dry, 76°·5 F. wet. Sea surface 77°·8 F.	
8.30	Sounding { Lat. 0° 52'·5 S 64 S { Long. 30° 9'·7 W }	2128 fms. n. sn.
11.11	Sounding { Lat. 0° 51'·6 S 65 S { Long. 29° 55'·3 W }	1879 fms. s. and m.
NOON.	Moderate SE by E breeze. Fine, but overcast. Slight rain at times. Moderate decreasing swell. Bar. 30·100 (79° F.). Temp. 76°·2 F. dry, 76° F. wet. Sea surface 78° F. Position by { Lat. 0° 48'·7 S. observations { Long. 29° 55'·4 W. Current observed since 5.10 a.m. = N 10 E, 4·0 N.M. = 0·7 KT.	

*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

Hour.	WEDNESDAY, SEPTEMBER 23 <sup>RD</sup> , 1891— <i>contd.</i>	
P.M.		
1.45	Sounding { Lat. 0° 38'·8 S 66 S { Long. 29° 55'·7 W }	2272 fms. glob. oz.
4.41	Sounding { Lat. 0° 37'·4 S 67 S { Long. 29° 40'·6 W }	2460 fms. glob. oz.
6.14	Current observed since noon = N 23 E, 3·5 N.M. = 0·5 KT.	
7.14	T. Sounding { Lat. 0° 25'·1 S 68 S { Long. 29° 37'·5 W }	2494 fms. glob. oz.
	Bottom Temp. { 35°·2 F. Corrected=32°·983 F.	
	Therm. "S." { Surface Temp.=78° F.	
8.0	Light SE by E breeze. Fine and clear. Moderate decreasing SE swell. Bar. 30·100 (79° F.). Temp. 78° F. dry, 77°·2 F. wet. Sea surface 78° F.	
10.10	T. Sounding { Lat. 0° 11'·9 S 69 S { Long. 29° 34'·2 W }	2442 fms. gy. m.
	Bottom Temp. { 35°·2 F. Corrected=33°·613 F.	
	Therm. "R." { Surface Temp.=78° F.	
MIDNT.	Moderate ESE breeze. Fine and clear. Moderate swell.	

THURSDAY, SEPTEMBER 24<sup>TH</sup>, 1891.

A.M.		
0.31	Sounding { Lat. 0° 1'·6 N 70 S { Long. 29° 31'·2 W }	2354 fms. glob. oz.
3.55	Lowered capsizing thermometer "R" (Negretti & Zambra's No. 56050) down to 1500 fms. (in same position as Sounding No. 71), and found temperature at that depth = 39°·1 F.= corrected, 38°·048 F. Surface temp. 78° F.	
5.4	Sounding { Lat. 0° 5'·8 N 71 S { Long. 29° 17'·6 W }	2277 fms.
	Lost 213 fms. of wire, 1 Benest's tube, and thermometer "R."	
5.30	Current observed since 6.14 p.m. yesterday = N 17 E, 11·1 N.M. = 1·0 KT.	
7.47	Sounding { Lat. 0° 6'·4 N 72 S { Long. 29° 5'·0 W }	2333 fms. gy. m.
8.0	Light SE breeze. Fine, but cloudy. Slight SE swell. Bar. 30·100 (77° F.). Temp. 78°·3 F. dry, 77° F. wet. Sea surface 77°·2 F.	

*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

Hour.	THURSDAY, SEPTEMBER 24TH, 1891— <i>contd.</i>	
A.M.		
10.8	Sounding { Lat. $0^{\circ} 20' \cdot 1$ N 73 S { Long. $29^{\circ} 6' \cdot 6$ W }	2047 fms. s. and m.
NOON.	Light SE breeze. Fine and clear. Slight SE swell. Bar. 30.090 (80° F.). Temp. 80.2 F. dry, 78.0 F. wet. Sea surface 79.2 F. Position by { Lat. $0^{\circ} 32' \cdot 4$ N. observations { Long. $29^{\circ} 8' \cdot 0$ W. Current observed since 5.30 a.m. = N 8 E, 3.4 N.M. = 0.5 KT.	
P.M.		
0.26	Sounding { Lat. $0^{\circ} 32' \cdot 4$ N 74 S { Long. $29^{\circ} 8' \cdot 0$ W }	1952 fms. glob. oz.
2.24	Sounding { Lat. $0^{\circ} 42' \cdot 3$ N 75 S { Long. $29^{\circ} 14' \cdot 9$ W }	1738 fms. glob. oz.
3.0	Observed St. Paul's Rocks bearing N 29 W.	
4.33	Sounding { Lat. $0^{\circ} 53' \cdot 3$ N 76 S { Long. $29^{\circ} 22' \cdot 4$ W }	593 fms. s. and m.
	St. Paul's Rocks (centre) bearing N $4\frac{1}{2}$ W (vertical angle $16' 40''$ , horizontal angle $4^{\circ} 32'$ ), 2.2 N.M. distant. Current observed since noon = N 55 W, 2.1 N.M. = 0.5 KT.	
5.58	Sounding { Lat. $0^{\circ} 52' \cdot 3$ N 77 S { Long. { By land $29^{\circ} 15' \cdot 5$ W ,, obsns. $29^{\circ} 14' \cdot 6$ W }	1329 fms. glob. oz.
	St. Paul's Rocks (centre) bearing N 65 W (horizontal angle $1^{\circ} 45'$ ) 7.7 N.M. distant.	
7.54	Sounding { Lat. $0^{\circ} 49' \cdot 7$ N 78 S { Long. $29^{\circ} 7' \cdot 9$ W }	1829 fms. Stiff mud.
8.0	Light SE breeze. Fine and clear. Slight SE swell. Bar. 30.100 (79° F.). Temp. 78.3 F. dry, 77.1 F. wet. Sea surface 78° F.	
10.10	Sounding { Lat. $0^{\circ} 45' \cdot 5$ N 79 S { Long. $28^{\circ} 57' \cdot 1$ W }	1637 fms. s. and m.
MIDNT.	Light SE by E breeze. Fine and clear.	

FRIDAY, SEPTEMBER 25TH, 1891.

A.M.		
0.14	Sounding { Lat. $0^{\circ} 42' \cdot 4$ N. 80 S { Long. $28^{\circ} 48' \cdot 9$ W. }	2167 fms. glob. oz.

*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

Hour.	FRIDAY, SEPTEMBER 25TH, 1891— <i>contd.</i>
A.M.	
2.15	Sounding { Lat. $0^{\circ} 40' 0''$ N. 81 S { Long. $28^{\circ} 42' 0''$ W. } 2126 fms. Lost 92 fms. of wire and 1 Sigsbee's tube.
4.40	Sounding { Lat. $0^{\circ} 53' 5''$ N 82 S { Long. $28^{\circ} 41' 1''$ W } 1669 fms. glob. oz.
5.39	Current observed since 4.30 p.m. yesterday = N 33 E, 3.1 N.M. = 0.3 KT.
6.41	Sounding { Lat. $1^{\circ} 4' 4''$ N 83 S { Long. $28^{\circ} 40' 8''$ W } 1859 fms. glob. oz.
8.0	Light SE breeze. Fine, but cloudy. Slight SE swell. Bar. 30.130 (79° F.). Temp. 77° 6 F. dry, 76° F. wet. Sea surface 77° 9 F.
9.2	Sounding { Lat. $1^{\circ} 5' 2''$ N 84 S { Long. $28^{\circ} 30' 9''$ W } 1949 fms. gy. m.
11.17	Sounding { Lat. $1^{\circ} 6' 1''$ N 85 S { Long. $28^{\circ} 20' 6''$ W } 1732 fms. n. sn.
NOON.	Moderate SE by E breeze. Fine and clear. Slight SE swell. Bar. 30.115 (81° F.). Temp. 78° 2 F. dry, 76° 5 F. wet. Sea surface 79° 2 F.  Position by { Lat. $1^{\circ} 9' 1''$ N. observations { Long. $28^{\circ} 21' 1''$ W.  Current observed since 5.39 a.m. = N 57 W, 4.0 N.M. = 0.7 KT.
P.M.	
1.12	Sounding { Lat. $1^{\circ} 17' 1''$ N 86 S { Long. $28^{\circ} 21' 4''$ W } 1813 fms. glob. oz.
3.18	Sounding { Lat. $1^{\circ} 28' 3''$ N 87 S { Long. $28^{\circ} 22' 0''$ W } 1787 fms. n. sn.
5.32	Sounding { Lat. $1^{\circ} 39' 5''$ N 88 S { Long. $28^{\circ} 22' 4''$ W } 1815 fms. glob. oz.
6.16	Current observed since noon = N 30° W, 3.3 N.M. = 0.5 KT.
7.50	Sounding { Lat. $1^{\circ} 40' 2''$ N 89 S { Long. $28^{\circ} 11' 2''$ W } 1789 fms. s. m.

*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

Hour.	FRIDAY, SEPTEMBER 25 <sup>TH</sup> , 1891— <i>contd.</i>	
P.M.		
8.0	Moderate SE by E breeze. Fine and clear. Slight SE swell Bar. 30·100 (79° F.). Temp. 78° F. dry, 76°·3 F. wet. Sea surface 79° F.	
10.20	Sounding { Lat. 1° 40'·5 N } 1812 fms. s. 90 S { Long. 27° 59'·7 W }	
MIDNT.	Moderate SE breeze. Fine and clear. Moderate SE swell.	
SATURDAY, SEPTEMBER 26 <sup>TH</sup> , 1891.		
A.M.		
0.48	Sounding { Lat. 1° 40'·8 N } 2043 fms. glob. oz. 91 S { Long. 27° 47'·1 W }	
3.16	Sounding { Lat. 1° 54'·2 N } 1588 fms. glob. oz. 92 S { Long. 27° 49'·8 W }	
5.14	Sounding { Lat. 2° 3'·6 N } 1914 fms. glob. oz. 93 S { Long. 27° 51'·6 W }	
	Current observed since 6.16 p.m. yesterday = N 21° E, 1·4 N.M. = 0·12 KT.	
8.0	Moderate SSE breeze. Fine, but cloudy. Moderate SE sea and swell. Bar. 30·100 (79° F.). Temp. 79°·9 F. dry, 76°·8 F. wet. Sea surface 78°·2 F.	
8.4	Sounding { Lat. 2° 19'·6 N } 2074 fms. s. 94 S { Long. 27° 55'·2 W }	
0.40	Sounding { Lat. 2° 23'·5 N } 2180 fms. 95 S { Long. 27° 42'·7 W }	
	Lost 4 fms. of wire and 1 Sigsbee's tube.	
NOON.	Moderate SE by S wind. Fine, but overcast. Moderate SE swell Bar. 30·090 (79° F.). Temp. 78°·3 F. dry, 76°·5 F. wet. Sea surface 79° F. Position by { Lat. 2° 25'·7 N. observations { Long. 27° 36'·3 W. Current observed since 5.14 a.m. = N 29° W, 2·6 N.M. = 0·4 KT.	
P.M.		
1.13	Sounding { Lat. 2° 27'·3 N } 1974 fms. glob. oz. 96 S { Long. 27° 30'·3 W }	
1.4	Sounding { Lat. 2° 43'·1 N } 1983 fms. glob. oz. 97 S { Long. 27° 32'·8 W }	

*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

SATURDAY, SEPTEMBER 26TH, 1891— <i>contd.</i>	
Hour. P.M. 8.0	Moderate SSE breeze. Fine and clear. Moderate SE swell. Bar. 30.120 (79° F.). Temp. 79°·5 F. dry, 76°·2 F. wet. Sea surface 79°·5 F.
8.4	Sounding { Lat. 2° 58'·7 N } 2292 fms. 98 S { Long. 27° 14'·6 W } Lost 8 fms. of wire and 1 Sigsbee's tube.
SUNDAY, SEPTEMBER 27TH, 1891.	
A.M. 3.2	Sounding { Lat. 3° 20'·9 N } 2199 fms. n. sn. 99 S { Long. 26° 34'·7 W }
5.42	Current observed since noon yesterday = N 70 W, 5·8 N.M. = 0·34 KT.
7.23	Sounding { Lat. 3° 49'·2 N } 1970 fms. 100 S { Long. 26° 46'·2 W } Lost 2022 fms. of wire, and 1 Sigsbee's tube. After taking this sounding, about 1½ hour's delay took place in trying to heave up the wire, owing to the weight not detaching; the wire finally broke.
8.0	Moderate SE by S wind. Fine, but cloudy. Moderate SE swell. Bar. 30.040 (80° F.). Temp. 79°·1 F. dry, 77°·3 F. wet. Sea surface 80° F.
NOON.	Light SE breeze. Fine, but cloudy. Moderate SE swell. Bar. 30.090 (80° F.). Temp. 79°·2 F. dry, 78°·2 F. wet. Sea surface 80°·2 F. Position by { Lat. 3° 55'·3 N. observations { Long. 26° 29'·5 W. Current observed since 5.42 a.m. = N 72 W, 5·6 N.M. = 0·9 KT.
P.M. 2.52	Sounding { Lat. 3° 53'·5 N } 2472 fms. glob. oz. 101 S { Long. 26° 14'·6 W }
6.48	Sounding { Lat. 4° 13'·7 N } 2515 fms. glob. oz. 102 S { Long. 25° 59'·0 W }
8.0	Light SE breeze. Fine, but overcast. Moderate SE swell. Bar. 30.135 (81° F.). Temp. 79° F. dry, 77°·1 F. wet. Sea surface 80° F.



*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

SUNDAY, SEPTEMBER 27TH, 1891— <i>contd.</i>	
Hour.	
P.M.	
10.32	Sounding { Lat. $4^{\circ} 37' \cdot 4$ N 103 S { Long. $26^{\circ} 7' \cdot 2$ W } 2405 fms. ooze.
MIDNT.	Light SE breeze. Fine, but overcast. Moderate SE swell.
MONDAY, SEPTEMBER 28TH, 1891.	
A.M.	
2.46	Sounding { Lat. $4^{\circ} 44' \cdot 1$ N 104 S { Long. $25^{\circ} 41' \cdot 8$ W } 2238 fms. glob. oz.
4.0	Light SSE breeze. Fine, but overcast. Slight swell.
6.20	Sounding { Lat. $5^{\circ} 7' \cdot 1$ N 105 S { Long. $25^{\circ} 36' \cdot 4$ W } 2433 fms. glob. oz.
8.0	Light SSE breeze. Overcast, with heavy rain. Confused SE swell. Bar. $30 \cdot 100$ ( $78^{\circ}$ F.). Temp. $78^{\circ}$ F. dry, $77^{\circ}$ F. wet. Sea surface, $79^{\circ} \cdot 9$ F.
10.8	Sounding { Lat. $5^{\circ} 19' \cdot 1$ N 106 S { Long. $25^{\circ} 17' \cdot 4$ W } 2431 fms. gy. m. and oz.
NOON.	Light SE airs. Overcast, with heavy rain. Slight SE swell. Bar. $30 \cdot 120$ ( $75^{\circ}$ F.). Temp. $75^{\circ} \cdot 2$ F. dry, $74^{\circ} \cdot 8$ F. wet. Sea surface, $80^{\circ} \cdot 5$ F. Position by { Lat. $5^{\circ} 30' \cdot 6$ N. observations { Long. $25^{\circ} 19' \cdot 3$ W. Current observed since noon yesterday = N 10 W, $17 \cdot 0$ N.M. = $0 \cdot 7$ KT.
P.M.	
2.0	Sounding { Lat. $5^{\circ} 41' \cdot 5$ N 107 S { Long. $25^{\circ} 20' \cdot 0$ W } 2237 fms. Lost 2300 fms. of wire and 1 Sigsbee's tube.
7.31	Sounding { Lat. $5^{\circ} 45' \cdot 3$ N 108 S { Long. $24^{\circ} 39' \cdot 6$ W } 2433 fms. glob. oz.
8.0	Light NW breeze. Overcast and cloudy with light rain. Bar. $30 \cdot 115$ ( $78^{\circ}$ F.). Temp. $77^{\circ} \cdot 6$ F. dry, $76^{\circ} \cdot 5$ F. wet. Sea surface $80^{\circ}$ F.
11.23	Sounding { Lat. $6^{\circ} 10' \cdot 2$ N 109 S { Long. $24^{\circ} 31' \cdot 4$ W } 2360 fms. s. m. and oz.
MIDNT.	Moderate S'ly wind. Fine, but gloomy and overcast

*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

Hour.	TUESDAY, SEPTEMBER 29 <sup>TH</sup> , 1891.	
A.M.		
4.31	Sounding { Lat. 6° 40'·3 N 110 S { Long. 24° 10'·1 W }	2354 fms. glob. oz.
8.0	Moderate SSE breeze. Fine, but overcast. Confused swell. Bar. 30·040 (80° F.). Temp. 79°·8 F. dry, 78° F. wet. Sea surface 81°·4 F.	
8.33	Sounding { Lat. 6° 48'·6 N 111 S { Long. 23° 47'·1 W }	2249 fms. s. and m.
NOON.	Moderate SSE breeze. Fine, but cloudy. Moderate SSE swell. Bar. 30·085 (81° F.). Temp. 80°·2 F. dry, 79°·1 F. wet. Sea surface 81°·5 F. Position by { Lat. 7° 0'·4 N. observations { Long. 23° 23'·6 W. Current observed since noon yesterday = N 72 E, 19·9 N.M. = 0·8 kt.	
P.M.		
0.32	Sounding { Lat. 7° 1'·3 N 112 S { Long. 23° 22'·2 W }	1748 fms. s. and m.
2.55	Sounding { Lat. 7° 3'·3 N 113 S { Long. 23° 9'·4 W }	2101 fms. glob. oz., capped with sand.
8.0	Moderate S'y breeze. Fine, but cloudy. Slight SE swell. Bar. 30·100 (81° F.). Temp. 80°·6 F. dry, 77°·8 F. wet. Sea surface 81°·2 F.	
8.10	Sounding { Lat. 7° 19'·9 N 114 S { Long. 23° 38'·2 W }	2245 fms. s. and m.
MIDNT.	Light S by E breeze. Fine and clear. Slight swell.	

WEDNESDAY, SEPTEMBER 30<sup>TH</sup>, 1891.

A.M.		
0.21	Sounding { Lat. 7° 31'·0 N 115 S { Long. 23° 11'·1 W }	2394 fms. glob. oz.
3.58	Sounding { Lat. 7° 49'·9 N 116 S { Long. 23° 18'·4 W }	2519 fms. Lost 2650 fms. of wire and 1 Sigsbee's tube.
5.50	Current observed since noon yesterday = N 37 E, 20 N.M. = 1·1 kt.	
7.18	Sounding { Lat. 8° 12'·1 N 117 S { Long. 23° 11'·0 W }	2559 fms. clay and glob. oz.



*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

Hour.	WEDNESDAY, SEPTEMBER 30TH, 1891— <i>contd.</i>			
A.M.				
8.0	Light S'ly breeze. Fine, but cloudy. Slight swell, sea smooth. Bar. 30·110 (82° F.). Temp. 84°·2 F. dry, 79°·3 F. wet. Sea surface 81° F.			
11.42	Sounding { Lat. 8° 11'·6 N } 2650 fms. glob. oz., 118 S { Long. 22° 40'·7 W } capped with s.			
NOON.	Light S'ly breeze. Fine and clear. Slight SE swell. Bar. 30·092 (82° F.). Temp. 83°·5 F. dry, 80°·2 F. wet. Sea surface 81°·2 F.			
	Position by { Lat. 8° 11'·6 N. observations { Long. 22° 40'·7 W. Current observed since 5.50 a.m.=N 69 E, 9·0 N.M.= 1·5 KT.			
	T. Sounding { Lat. 8° 34'·3 N. } 2542 fms. grt. and m. 119 S { Long. 22° 40'·0 W. }			
P.M.	No. of Therm.	Depth.	Temp. obs'vd.	Temp. cor'td.
3.9	56051 (Negretti & Zambra's capsizing)	1000	39°·5	38°·132
3.49		1500	38°·1	36°·448
4.43		2000	37°·6	35°·664
	Bottom temp. 37°·3 F.=35°·056 F. corrected. Surface temp. 81°·1 F. (Same thermometer).			
	At each sounding the thermometer was allowed to remain stationary for ten minutes.			
6.40	Set on for position to take Sounding No. 120.			
8.0	Light NW airs. Fine and clear. Slight S'ly swell. Bar. 30·020 (80° F.). Temp. 80°·3 F. dry, 79°·1 F. wet Sea surface 80°·2 F.			
9.17	Sounding { Lat. 8° 51'·2 N } 2647 fms. ooze. 120 S { Long. 22° 31'·9 W }			
MIDNT.	Light N'ly breeze. Fine, but overcast, with light rain.			

*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

Hour.	THURSDAY, OCTOBER 1st, 1891.	
A.M.		
0.59	Sounding { Lat. 8° 50'·6 N 121 S { Long. 22° 10'·9 W }	2422 fms. glob. oz.
4.42	Sounding { Lat. 9° 8'·4 N 122 S { Long. 21° 58'·3 W }	2429 fms. glob. oz.
8.0	Light W'ly airs. Fine, but cloudy. Slight S'ly swell. Bar. 30·010 (80° F.). Temp. 83°·4 F. dry, 80°·8 F. wet. Sea surface 81°·6 F.	
8.34	Sounding { Lat. 9° 28'·4 N 123 S { Long. 21° 55'·4 W }	2552 fms. m. and oz.
11.57	Sounding { Lat. 9° 37'·6 N 124 S { Long. 21° 34'·3 W }	2384 fms.
	Lost 1 Sigsbee's tube.	
NOON.	Light N'ly airs. Fine, but overcast. Slight S'ly swell. Bar. 30·070 (81° F.). Temp. 82°·3 F. dry, 80°·7 F. wet. Sea surface 82°·3 F.	
	Position by { Lat. 9° 37'·6 N. observations { Long. 21° 34'·3 W.	
	Current observed since noon yesterday=S 79 E, 14·9 N.M. =0·6 KT.	
P.M.		
0.15	Wind veered to NE, during a heavy squall of rain.	
3.37	Sounding { Lat. 9° 53'·0 N 125 S { Long. 21° 24'·4 W }	2826 fms. glob. oz.
6.14	Current observed since noon=N 11 E, 4·3 N.M.=0·7 KT.	
7.40	Sounding { Lat. 10° 12'·7 N 126 S { Long. 21° 33'·8 W }	2711 fms. oz.
8.0	Light NNE airs. Fine, but cloudy. Slight S'ly swell. Bar. 30·040 (79° F.). Temp. 78°·6 F. dry, 77°·9 F. wet. Sea surface 80°·4 F.	
11.23	Sounding { Lat. 10° 20'·7 N 127 S { Long. 21° 11'·2 W }	2784 fms. oz

*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

HOOR.	FRIDAY, OCTOBER 2ND, 1891.
A.M.	
2.41	Sounding { Lat. 10° 29'·0 N 128 S { Long. 20° 54'·3 W } 2696 fms. glob. oz.
5.35	Current observed since 6.14 p.m. yesterday = N 58 E, 9·2 N.M. = 0·8 KT.
6.15	Sounding { Lat. 10° 45'·3 N 129 S { Long. 20° 45'·1 W } 2758 fms. cl.
8.0	Calm. Fine and clear. Hot sultry weather. Slight confused N'y swell. Bar. 30·050 (80° F.). Temp. 82° F. dry, 80° F. wet. Sea surface 81·1° F.
9.41	Sounding { Lat. 11° 3'·1 N 130 S { Long. 20° 46'·3 W } 2735 fms. oz.
NOON.	Light E by N airs. Fine, but cloudy. Hot sultry weather. Slight confused swell, from N. and S. Bar. 30·055 (82° F.). Temp. 83·2 F. dry, 82° F. wet. Sea surface 82°·2 F. Position by { Lat. 11° 10'·5 N. observations { Long. 20° 31'·0 W. Current observed since 5.35 a.m. = N 67 E, 6·1 N.M. = 1·0 KT.
P.M.	
0.58	Sounding { Lat. 11° 12'·3 N 131 S { Long. 20° 27'·4 W } 2707 fms. glob. oz.
4.35	Sounding { Lat. 11° 21'·5 N 132 S { Long. 20° 9'·8 W } 2664 fms. glob. oz.
6.6	No current observed since noon. Position of ship the same by D.R. as by observations.
7.45	Sounding { Lat. 11° 24'·3 N 133 S { Long. 19° 55'·0 W } 2629 fms. oz.
8.0	Calm. Fine and clear. Slight N'y swell. Bar. 30·010 (82° F.). Temp. 86·7° F. dry, 79°·2 F. wet. Sea surface 81·7° F.
11.35	Sounding { Lat. 11° 43'·3 N 134 S { Long. 20° 4'·0 W } 2670 fms. oz.
MIDNT.	Calm. Fine and clear. Hot sultry weather.

*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

Hour.	SATURDAY, OCTOBER 3RD, 1891.
A.M.	
3.14	Sounding { Lat. 12° 4'·0 N } 2655 fms. 135 S { Long. 20° 1'·6 W } Lost 35 fms. of wire and 1 Sigsbee's tube.
5.42	Position by Star observations and by D.R. the same. No current observed since 6.6 p.m. yesterday.
6.50	Sounding { Lat. 12° 8'·6 N } 2595 fms. glob. oz. 136 S { Long. 19° 40'·9 W }
8.0	Calm. Fine and clear. Slight N'ly swell. Bar. 30·039 (81° F.). Temp. 82°·5 F. dry, 80°·1 F. wet. Sea surface 82°·2 F.
10.29	Sounding { Lat. 12° 20'·2 N } 2508 fms. cl. 137 S { Long. 19° 22'·1 W }
NOON.	Calm. Fine, but cloudy. Very hot and sultry. Slight confused swell. Bar. 30·090 (83° F.). Temp. 84°·5 F. dry, 80°·2 F. wet. Sea surface 85°·2 F. Position by { Lat. 12° 27'·5 N. observations { Long. 19° 22'·2 W. Current observed since 5.42 a.m.=S 69 E, 3·6 N.M.= 0·6 KT.
P.M.	
1.21	Sounding { Lat. 12° 34'·2 N } 2368 fms. cl. 138 S { Long. 19° 24'·4 W }
4.40	Sounding { Lat. 12° 46'·8 N } 2449 fms. glob. oz. and 139 S { Long. 19° 28'·6 W } choc. cld. mud.
6.10	Current observed since noon=S 15 W, 3·8 N.M.=0.63 KT.
8.0	Light NNE airs. Fine and clear. Slight N'ly swell. Bar. 30·015 (82° F.). Temp. 81°·7 F. dry, 79°·8 F. wet. Sea surface 82° F.
8.21	Sounding { Lat. 12° 49'·6 N } 2409 fms. gy. m. 140 S { Long. 19° 6'·7 W }
11 39	Sounding { Lat. 12° 59'·1 N } 2299 fms. gy. m. 141 S { Long. 18° 51'·0 W }
MIDNT.	Light N by E airs. Fine, with light passing clouds. Slight N'ly swell.

*Sounding between Fernando Noronha and Senegal.*

S.S. "SILVERTOWN."

Hour.	
A.M.	SUNDAY, OCTOBER 4TH, 1891.
2.51	Sounding { Lat. 13° 15'·4 N 142 S { Long. 18° 47'·6 W } 2188 fms. gy. m.
5.38	Current observed since 6.10 p.m. yesterday=S 44 E, 6.0 N.M.=0·5 KT.
6.22	Sounding { Lat. 13° 31'·1 N 143 S { Long. 18° 39'·6 W } 2093 fms. glob. oz.
8.0	Light N'ly airs. Fine, but cloudy. Slight increasing N by E swell. Bar. 30·010 (81° F.). Temp. 81°·2 F. dry, 79°·2 F. wet. Sea surface 82°·4 F.
9.32	Sounding { Lat. 13° 43'·4 N 144 S { Long. 18° 25'·9 W } 1858 fms. gy. cl. and oz.
NOON.	Calm. Fine, but overcast. Very hot sultry weather. Slight N'ly swell. Bar. 30·040 (82° F.). Temp. 83° F. dry, 80°·2 F. wet. Sea surface 83° F. Position by { Lat. 13° 55'·5 N. observations { Long. 18° 16'·5 W. Current observed since 5.38 a.m.=S 60 E, 8·2 N.M.= 1·3 KT.
P.M.	
0.46	Sounding { Lat. 13° 57'·9 N 145 S { Long. 18° 15'·5 W } 1665 fms. stf. gy. cl.
3.12	Sounding { Lat. 14° 12'·5 N 146 S { Long. 18° 16'·9 W } 1486 fms. gy. m.
5.45	Sounding { Lat. 14° 26'·7 N 147 S { Long. 18° 15'·2 W } 1415 fms. dk. gn. m.
6.15	Current observed since noon=N, 3·0 N.M.=0·5 KT.
7.57	Sounding { Lat. 14° 32'·4 N 148 S { Long. 18° 3'·2 W } 1119 fms. gn. m.
8.0	Calm. Fine and clear. Slight NE swell. Bar. 30·025 (82° F.). Temp. 81°·6 F. dry, 79°·5 wet. Sea surface 84° F.
10.7	Sounding { Lat. 14° 42'·7 N 149 S { Long. 17° 55'·8 W } 913 fms. gn. m.
10.20	Set on for Dakar.
11.20	Observed Cape Verd Light, bearing E.
MIDNT.	Calm. Fine and clear. Very hot and sultry. Lightning to the SW. Moderate N'ly swell.



ON    HOMEWARD    VOYAGE    AFTER    THE  
WESTERN    AND    BRAZILIAN    CABLES  
EXPEDITION.

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AT DAKAR.

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SOUNDING    BETWEEN    DAKAR    AND  
ST. LOUIS.

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S.S. "SILVERTOWN."

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OCTOBER 5TH TO OCTOBER 6TH, 1891.

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## AT DAKAR.

### SOUNDING BETWEEN DAKAR AND ST. LOUIS.

#### S.S. "SILVERTOWN."

Hour.	MONDAY, OCTOBER 5TH, 1891.
A.M.	
0.50	Position { Cape Manuel Light bearing S 69° E. Almadie        "        "        N 14° E. Cape Verd     "        "        N 46° E. Current observed since 6.15 p.m. yesterday = N 51 E, 7.5 N.M.
2.15	Let go anchor in $5\frac{1}{2}$ fms. off Dakar Breakwater. Draught of ship { Forward 15' 6". Aft 20' 8".
6.40	Doctor of port came alongside and put ship in quarantine for five days.
8.0	Light NNE airs. Fine and clear. Hot and sultry. Bar. 30.030 (84° F.). Temp. 83°·2 F. dry, 81°·1 F. wet.
8.30	Mr. M. H. Gray left for shore to get ship's mail through quarantine; to telegraph Messrs. Miller and Cory, at St. Vincent, to send ship's letters to Las Palmas; and to wire to London office the information that ship has arrived here. A telegram was sent to M. Borgella, at St. Louis, instructing him to apply to the Governor of Senegal for permission to land Shore End. A strip of beach necessary for this work could be placed in quarantine while the ship's hands were ashore. Capt. Thomson and Mr. P. Bates also left for shore to take sights for time.
10.20	Mr. M. H. Gray, with Capt. Thomson and Mr. Bates, returned to ship. While on shore Mr. Gray learned from the <i>visé</i> on the bill of health that the ship was placed in quarantine for 23 days, not five days, as stated by the doctor of the port on visiting ship this morning.

*Sounding between Dakar and St. Louis.*

S.S. "SILVERTOWN."

Hour.	MONDAY, OCTOBER 5TH, 1891— <i>contd.</i>
A.M.	
11.7	Very threatening appearance, with lightning, to the SE. Calm. Very hot and sultry in the harbour. Temp. 87° F.
11.22	Weighed anchor and set on for St. Louis, Senegal, sounding <i>en route</i> .
11.45	A tornado from the ESE with rain overtook ship. Temperature falling rapidly.
NOON.	Moderate E'ly wind. Overcast, with heavy rain. Lightning and thunder. Bar. 30·035 (83° F.). Temp. 78°·5 F. dry, 77°·5 F. wet. Sea surface 82°·7 F.
P.M.	
1.20	Almadie Reef bearing E, 0·7 N.M. distant. Moderate wind. Overcast, with very heavy rain, lightning and thunder. Land almost obscured by haze.
2.0	Rain ceased. Weather clearing rapidly.
4.35	Sounding { Lat. 15° 7'·4 N 150 S { Long. 17° 35'·2 W } 647 fms. gn. m.
6.12	Current observed since 1.20 p.m.=nil.
7.55	Sounding { Lat. 15° 26'·9 N 151 S { Long. 17° 23'·8 W } 591 fms. gn. m.
8.0	Calm. Fine and clear. Bar. 30·000, 82° F. Temp. 81°·6 F. dry, 79°·7 F. wet. Sea surface 83°·6 F.
10.22	Sounding { Lat. 15° 41'·9 N 152 S { Long. 17° 20'·2 W } 737 fms. gy. m.

TUESDAY, OCTOBER 6TH, 1891.

A.M.	
1.39	Sounding { Lat. 15° 57'·9 N 153 S { Long. 17° 4'·2 W } 526 fms. gn. m.
1.50	Set on "half speed" for anchorage off St. Louis.
6.5	Sounding { Lat. 16° 2'·7 N 154 S { Long. 16° 37'·1 W } 22 fms. gn. m. St. Louis Government House bearing S 77½ E.
6.40	Current observed since 6.12 p.m. yesterday=S 11 E, 5·2 N.M.=0·5 KT.

ON    HOMEWARD    VOYAGE    AFTER    THE  
WESTERN    AND    BRAZILIAN    CABLES  
EXPEDITION.

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AT ST. LOUIS.

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S.S. "SILVERTOWN."

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OCTOBER 6TH, 1891.

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# AT ST. LOUIS.

## S.S. "SILVERTOWN."

Hour.	TUESDAY, OCTOBER 6TH, 1891— <i>contd.</i>
A.M.	
7.6	Let go anchor in 7 fms. off St. Louis. Government House flagstaff bearing N $83\frac{1}{2}$ E, 1.2 N.M. distant.
7.10	A canoe came alongside with ship's mail, and a letter from M. Borgella, concerning quarantine arrangements and the landing of Shore-End cable.
7.57	Canoe left for shore with a letter for M. Borgella.
8.0	Light WNW breeze. Fine and clear. Calm sea. Little or no surf on the beach. Bar. 30.025 (84° F.). Temp. 88° F. dry, 84°·2 F. wet Sea surface 84° F.
10.5	Canoe returned with letters and telegrams for Mr. M. H. Gray.
NOON.	Light WNW airs. Fine and clear. Bar. 30.025 (84° F.). Temp. 89° F. dry, 86° F. wet. Sea surface 85° F.
P.M.	
4.0	Cable hands employed during the afternoon getting Buoy 50 into starboard mizen rigging and fitting it with moorings. Lowered port and starboard cutters and coiled 3 coils of 4" rope in starboard cutter and 3 coils of $4\frac{1}{2}$ " rope in port cutter, ready for use as hauling-off line to-morrow. Got balloon buoys up on deck, and prepared all gear for the landing of Shore-End cable to-morrow morning.
5.0	During the day satisfactory tests were taken on the spliced pieces of Shore-End (No. 2060, 4.0 N.M. in length) and Heavy Intermediate (No. 2061, 2.99 N.M. in length) India-rubber core, in after tank. This cable will be laid as the Senegal End of the Senegal—Fernando Noronha Section.
5.4	Canoe came from shore with a letter.

S.S. "SILVERTOWN."

Hour.	TUESDAY, OCTOBER 6TH, 1891— <i>contd.</i>
P.M. 5.30	Hauled top end of Shore-End, No. 2060, Sec. "4," from after tank and 3 times round paying-out drum to stern-baulks and there sealed the end.
6.4	NOTE.—During the day Mr. Gray has arranged with the authorities on shore, through the agency of M. Borgella (Superintendent of the Spanish National Submarine Telegraph Co.) for the landing of cable. A space for a length of 100 metres above high-water mark, parallel with the beach, will be staked off by the sanitary authorities on shore, who will also provide police to preserve this line while the men from the "Silvertown" are at work. Four hours will be allowed for the landing of the cable. By this arrangement a delay of 8 days' quarantine for the ship is avoided. Arranged also with canoe man and others to be alongside ship at 8.30 a.m.
8.0	Light NW by W breeze. Fine and clear. Bar. 30·025 (84° F.). Temp. 84° F. dry, 81°·9 F. wet. Sea surface 85°·2 F.

ON    HOMEWARD    VOYAGE    AFTER    THE  
WESTERN    AND    BRAZILIAN    CABLES  
EXPEDITION.

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LAYING THE ST. LOUIS—FERNANDO  
NORONHA SECTION.

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LANDING AND LAYING SHORE-END  
AND HEAVY INTERMEDIATE (I.R. CORE) AT  
ST. LOUIS.

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S.S. "SILVERTOWN."

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OCTOBER 7TH TO OCTOBER 8TH, 1891.

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# LAYING THE ST. LOUIS—FERNANDO NORONHA SECTION.

S.S. "SILVERTOWN."

HOUR.	Landing Shore-End at St. Louis.
A.M.	WEDNESDAY, OCTOBER 7TH, 1891.
2.30	Sudden shift of wind to the SE, in a squall with rain.
4.0	Light SW wind. Fine, but overcast. Moderate S'y swell.
6.10	Weighed anchor and set on for position to land Shore End.
7.5	Let go starboard anchor in 7 fathoms, veered chain to 60 fathoms. Government House flagstaff bearing S 80 E.
7.35	Put two more coils of 4" rope in starboard cutter, and two coils of 4½" rope in port cutter. Also a length of 2" rope put in each boat, by means of which the native canoes will get end of hauling-off ropes through the surf to beach.
8.0	Light WNW wind. Fine and clear. Bar. 30.020 (82° F.). Temp. 83° F. dry, 80°·1 F. wet. Sea surface 84° F. Observed police on shore marking out space on the beach, to be reserved as cable landing place in quarantine. Moderate, but increasing, surf running in to the beach.
8.57	Mr. F. W. Robinson left in gig taking port cutter, containing five coils of 4½" rope, in tow for position near the surf, there to anchor and wait for canoes to land end of the rope.
9.6	Messrs. M. H. Gray and A. Dearlove, with five cable hands, left in starboard surf boat (containing 1 spider wheel, 1 sand anchor, and sundry gear required on the beach) for shore.
9.7	Mr. Lumsden left in port surf boat for the beach, taking a spider wheel and sand anchor and the remainder of gear required on the beach.

S.S. "SILVERTOWN."

HOUR A.M.	Landing Shore-End at St. Louis— <i>contd.</i>
9.8	WEDNESDAY, OCTOBER 7 <sup>TH</sup> , 1891— <i>contd.</i>
	Starboard cutter left, in tow of port gig, with five coils of 4" rope for position near the surf, there to anchor and wait for canoes to land end of the rope.
9.25	Messrs. Gray and Dearlove, with men, safely landed with starboard surf boat.
9.32	Mr. Lumsden and hands safely landed with port surfboat.
9.40	Observed cable hands on the beach getting spider wheels in position.
9.45	Commenced to heave up anchor, so as to move ship more to the N'd for a better position to land the cable.
9.55	Observed end of line from port cutter landed on the beach by a canoe.
10.0	Anchor up. Set on for position for landing Shore-End. Surf increasing.
10.6	Let go port anchor in $6\frac{1}{4}$ fms, veered chain to 50 fms. Position of St. Louis Hut { Lat. $16^{\circ} 1' 6''$ N. Long. $16^{\circ} 31' 0''$ W.
	Hands on the beach hauling on rope from port cutter.
10.25	Observed canoe land end of rope from starboard cutter. Ship swung round almost stern on to the beach, about 0.4 N.M. off flag on beach, marking spider wheel. Shore signalled, "100 metres between yellow flags."
10.43	Port cutter paying out $4\frac{1}{2}$ " rope from the beach arrived at ship's stern, took end of rope in over stern sheave and made it fast to Shore-End cable on stern baulks.
	NOTE.—Only four ropes used.
10.53	Observed cable hands on beach shackle the ends of ropes from cutters together.
11.0	Hoisted up port cutter.
11.10	Shore signalled, "Stop on 20 fms."
	Starboard cutter in tow of both gigs, paying out the 4" rope from the beach, arrived at ship's stern. Took end of the rope in over port quarter, and along the deck to port picking-up drum. Endless messenger between ship and shore now complete.
11.30	Bent 20 fms. of the $4\frac{1}{2}$ " rope of messenger on to cable on stern baulks.

*Laying the St. Louis—Fernando Noronha Section.*

S.S. "SILVERTOWN."

Hour.	Landing Shore-End at St. Louis— <i>contd.</i>
	WEDNESDAY, OCTOBER 7 <sup>TH</sup> , 1891— <i>contd.</i>
A.M.	
11.31	Commenced to heave in on endless messenger with port picking-up drum.
11.36	End of cable (Shore-End, No. 2060, Sec. "4") from after tank passed over the stern with first balloon buoy attached.
11.48	Picking up on messenger slowly, as there is some strain on it at times.
NOON.	Moderate WNW breeze. Fine, but cloudy. Slight WNW swell and sea. Increasing surf on beach. Bar. 30.050 (84° F.). Temp. 84°.2 F. dry, 82°.2 F. wet. Sea surface 84°.5 F.
P.M.	
0.11	Endless messenger (4" rope) parted near picking-up drum, but the end was secured in time to prevent it passing over ship's stern.
0.14	Endless messenger repaired, resumed heaving in on it very slowly, and paying out on cable with paying-out drum as required.
0.26	Wind and swell has gradually set bight of cable between ship and shore well to the S'd, and over the hauling-off line.
0.40	End of cable on the beach. 0.404 N.M. OF CABLE PAID OUT FROM SHIP TO BEACH.
0.47	Shore hoisted "Stop" signal.
0.48	Sand anchor on the beach appears to have shifted. Slacked out on messenger to ease the strain on the spider wheel on the beach. 0.428 N.M. of cable paid out.
1.0	Cable hands on the beach reburying sand anchor.
1.36	Commenced to pump water out of after cable tank.
1.43	Shore hoisted "All clear" signal. Resumed heaving in on messenger and paying out cable.
1.50	Shore signalled, "Enough cable ashore. Take off buoys." 32 balloon buoys out.
	Shore-End, No. 2060, Sec "4," from ship to beach .. .. = 0.404 N.M. Shore-End, No. 2060, Sec. "4," on beach .. = 0.060 ..
	Total paid out at anchorage = 0.464 N.M.

S.S. "SILVERTOWN."

HOUR.  
P.M.

Landing Shore-End at St. Louis—*contd.*

WEDNESDAY, OCTOBER 7TH, 1891—*contd.*

Position { Lat.  $16^{\circ} 1' 6''$  N.  
of ship { Long.  $16^{\circ} 31' 5''$  W.  
Government House bearing S  $76^{\circ}$  E.  
Distance by chart from ship to beach =  $0.4$  n.m.  
Stopped heaving in and paying out.

- 2.1 Shore signalled, "Send gig with full crew to anchor outside surf, to take small line from buoys inshore."
- 2.6 Shore hoisted the "All clear" signal.
- 2.15 Starboard cutter left to take balloon buoys off cable.
- 2.18 Shore signalled, "Hauling off rope passes under cable, so cannot use it."
- 2.30 Signalled to shore, "Gig going to anchor outside surf; send 'pirogue' with small line out to her." Shore replied, "o.k. Will send 'pirogue' to gig."  
Gig left ship to anchor near the surf.
- 2.40 Resumed heaving in on messenger or hauling line.
- 2.45 Signalled to shore, "Shall we haul off rope?" Shore replied, "Yes, we cannot use it, as it passes under cable."
- 2.47 Cutter returned with several balloon buoys.
- 2.56 End of hauling line came inboard over port quarter.  
Observed cable hands on shore burying the cable on the beach.
- 3.0 Starboard cutter left to get more balloon buoys off cable.
- 3.20 Cutter returned with one balloon buoy only; unable to get any more as those that still remain on the cable are in the surf. Several have broken adrift and are floating ashore.
- 3.25 Shore signalled, "Pick up on cable a little." Replied, "o.k., directly."
- 3.28 Shore signalled, "Go very slow."
- 3.35 Commenced to heave in cable with paying-out drum, coiling it down in after tank.
- 3.37 Hoisted up starboard cutter.
- 4.4 Stopped heaving in cable in accordance with signals from shore.

CABLE PICKED UP =  $0.015$  n.m.

S.S. "SILVERTOWN."

Hour.  
P.M.

Paying out the St. Louis Shore-End.

WEDNESDAY, OCTOBER 7TH, 1891—*contd.*

Shore-End, No. 2060, Sec. "4," from ship to  
beach .. .. = 0.389 N.M.  
Shore-End, No. 2060, Sec. "4," on beach .. = 0.060 ,,

TOTAL SHORE-END CABLE PAID OUT = 0.449 N.M.

- 4.17 Pirogue came out from beach, and after passing end of a rope to gig (at anchor to seawards of surf) left for the beach again, paying out rope on the way. This rope is to assist surf boat in coming out from the beach. One of the surf boats partly launched, the other well up on the beach.
- 4.18 End of rope from gig passed by the pirogue to cable hands on the beach, but owing to a current running along the beach and the heavy rollers, the men were unable to get a good hold of the line, and it was swept away.
- 4.30 Observed surf boat launched and coming out seawards with Messrs. Gray, Dearlove, and Lumsden and the cable hands in it. Three pirogues in company.
- 4.38 Surf boat carried some distance away to leeward and swamped in the surf, all hands turned out of boat and swimming to shore; observed all hands land safely.
- 4.40 Line from surf boat taken ashore. Surf boat hauled upon beach.
- 5.2 Mr. Gray signalled, "Gray to Benest. Pay out cable now along proposed route. We stay ashore to-night. Both boats stove in." Replied, "O.K."
- 5.5 Recalled gig.
- 5.15 Hoisted up gigs and prepared to start laying cable out seaward.
- 5.26 Commenced to heave up anchor. Paying out cable as necessary.
- 5.40 Anchor up. Put engine of paying-out machine out of gear. Weight on brake levers=844 lbs.
- 5.42 Set on "easy ahead." SHIP ON COURSE N 76 W.
- 6.0 1.122 N.M. OF SHORE-END CABLE LAID FROM HUT.  
Drum 20 revs. per min.=3.5 KTS. Ship's engines=26 revs. per min. Weight on brake levers=844 lbs. Dynamometer =12 to 16 cwt



S.S. "SILVERTOWN."

Hour. P.M.	Paying out the St. Louis Shore-End.
	WEDNESDAY, OCTOBER 7TH, 1891— <i>contd.</i>
6.3	1·285 N.M. OF SHORE-END CABLE LAID FROM HUT. CHANGED COURSE TO N 47 W. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 76 W (MADE GOOD N 80 W)=0·836 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 76 W (MADE GOOD N 80 W)=0·800 N.M. Slack=4·5 %.
	Position { Lat. 16° 1'·75 N. Long. 16° 32'·2 W. Government House bearing S 76 E.
6.4	Increased ship's engines to 29 revs. per min.
6.30	2·964 N.M. OF SHORE-END CABLE LAID FROM HUT. Drum=24 revs. per min.=4·24 KTS. Ship's engines= 29 revs. per min. Weight on brake levers=844 lbs. Dynamometer=12 to 16 cwt. Strophometer=23 to 26 revs.
6.32	3·141 N.M. OF SHORE-END CABLE LAID FROM HUT. CHANGED COURSE TO N 89 W. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 47 W (MADE GOOD N 53 W)=1·856 N.M. DISTANCE BY CHART, OVERGROUND, ON LAST COURSE, N 47 W (MADE GOOD N 53 W)=1·800 N.M. Slack=3·11 %.
	Position { Lat. 16° 3'·0 N. Long. 16° 33'·8 W. St. Louis Light bearing S 65 E..
	<b>Paying out the St. Louis Heavy Intermediate.</b>
6.45	SPLICE BETWEEN SHORE-END, No. 2060, SEC. "4," AND HEAVY INTERMEDIATE, No. 2061, SEC. "4A," PASSED OFF DRUM. Shore-End, No. 2060, Sec. "4," paid out by Drum measurement .. .. = 4·003 N.M. Shore-End, No. 2060, Sec. "4," paid out by Factory measurement .. .. = 4·000 ,,
	Difference = + 0·003 N.M.
	Position { Lat. 16° 3'·0 N. of splice { Long. 16° 34'·6 W.
7.0	1·214 N.M. of Heavy Intermediate paid out from after tank. TOTAL AMOUNT OF CABLE LAID FROM HUT=5·214 N.M. Drum=26 revs. per min.=4·6 KTS. Ship's engines= 29 revs. per min. Weight on brake levers=844 lbs. Dyna- mometer=0 to 8 cwt. Strophometer=24 to 30 revs. Decreased ship's engines to 24 revs. per min. Approaching end of cable in after tank.
7.10	Increased ship's engines to 27 revs. per min.

S.S. "SILVERTOWN."

Hour.	Buoying the St. Louis Heavy Intermediate— <i>contd.</i>
P.M.	WEDNESDAY, OCTOBER 7TH, 1891— <i>contd.</i>
7.15	Sealed end of cable in after tank ready for buoying.
7.20	Ship's engines dead slow.
7.25	Increased weight on brake levers to 1112 lbs.
7.31	Stopped ship.
7.32	End of Heavy Intermediate, No. 2061, Sec. "4A," from after tank, passed off drum to stern baulks.
	Heavy Intermediate, No. 2061, Sec. "4A," paid out by Drum measurement .. .. = 2·982 N.M.
	Heavy Intermediate, No. 2061, Sec. "4A," paid out by Drum measurement .. .. = 2·990 ,,
	Difference = - 0·008 N.M.
	TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM ST. LOUIS HUT FOR THE SENEGAL—FERNANDO NORONHA SECTION.
	SHORE-END, NO. 2060, SEC. "4" = 4·000 N.M.
	HEAVY INTERMEDIATE, NO. 2061, SEC. "4A" = 2·990 N.M.
	6·990 = N.M.
	CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, N 89 W = 3·849 N.M.
	DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 89 W = 3·800 N.M.
7.33	Set about bending mooring chain of buoy on to end of cable.
7.41	Let go end of cable attached to Buoy 50; two cages on flagstaff on buoy.
	Position of Buoyed End $\left\{ \begin{array}{l} \text{Lat. } 16^{\circ} 3' \cdot 1 \text{ N.} \\ \text{Long. } 16^{\circ} 37' \cdot 7 \text{ W.} \\ \text{St. Louis Light bearing S } 77 \text{ E.} \end{array} \right.$
	Moorings of Buoy 50:—
	20 fms. of $\frac{3}{4}$ " chain.
	2 10-fm. lengths of $\frac{3}{4}$ " chain.
	1 fm. $\frac{5}{8}$ " chain.
	2½ fms. $\frac{5}{8}$ " chain for mushroom.
	1 mushroom = 5 cwt. 0 qrs. 21 lbs.
	The following links and shackles are in the moorings:—
	2-1" egg links, 1-1¼" shackle, 1-1½" shackle, 5-1" shackles, and 2-¾" shackles.

*Laying the St. Louis—Fernando Noronha Section.*

S.S. "SILVERTOWN."

**Hour.**      **Buoying the St. Louis Heavy Intermediate—*contd.***

**P.M.**

WEDNESDAY, OCTOBER 7TH, 1891—*contd.*

NOTE.—The shackle on the ring at bottom of buoy is riveted on.

7.45      Sounding { Lat.  $16^{\circ} 3' \cdot 1$  N  
                  155 S    { Long.  $16^{\circ} 37' \cdot 7$  W } 22 fms.    gn. m.

7.47      Set on for anchorage off St. Louis.

8.0      Light NE breeze.    Fine and clear.    Slight NW swell.  
            Bar. 30·005 ( $84^{\circ}$  F.).    Temp.  $83^{\circ} \cdot 4$  F. dry,  $81^{\circ}$  F. wet.  
            Sea surface  $84^{\circ}$  F.

8.50      Let go anchor in 8 fathoms off St. Louis.

THURSDAY, OCTOBER 8TH, 1891.

**A.M.**

7.45      Messrs. M. H. Gray, A. Dearlove, and J. F. Lumsden, with cable hands, who were working on the beach yesterday, returned to ship in canoes.    The two surf boats and all the cable gear landed by boats yesterday are left on shore.

8.0      Light SE breeze.    Fine and clear.  
            Bar. 30·100 ( $81^{\circ}$  F.).    Temp.  $80^{\circ}$  F. dry,  $76^{\circ} \cdot 3$  F. wet.    Sea surface  $84^{\circ} \cdot 2$  F.

            Weighed anchor and set on for Las Palmas, Gran Canaria.

            Draught { Forward  $15' 6''$ .  
                  of ship { Aft  $19' 8''$ .



SOUTH AMERICAN CABLES EXPEDITION.

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ON OUTWARD VOYAGE TO FERNANDO  
NORONHA AND PERNAMBUCO.

---

AT DAKAR.

---

LANDING ELECTRICAL STORES FOR  
ST. LOUIS.

---

S.S. "SILVERTOWN."

---

MAY 12TH TO MAY 13TH, 1892.

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# AT DAKAR.

S.S. "SILVERTOWN."

## LANDING ELECTRICAL STORES FOR ST. LOUIS.

Hour. P.M.	THURSDAY, MAY 12 <sup>TH</sup> , 1892.
4.54	Let go anchor at Dakar in $6\frac{1}{2}$ fms. Draught { Forward 28' 3". of ship { Aft 29' 0".
5.5	Cable hands lowered starboard surf boat and cutter, and commenced loading them with electrical stores and apparatus, and a drum of land-line cable (508 yards of Type No. 2177) for St. Louis Hut.
5.10	Doctor of port came alongside and granted pratique.
5.20	Mr. M. H. Gray left for shore, accompanied by Messrs. A. P. Crouch, H. B. Forde, J. F. Lumsden, and C. Barret, who are to proceed by rail to St. Louis to-morrow morning, for duty at cable hut there.
5.35	Starboard surf boat, containing the drum of land-line cable and sundry electrical stores, left for shore to land cable and stores for transit by rail to St. Louis.
5.45	Starboard cutter, containing the remainder of electrical stores for St. Louis Hut, left for shore. Molt, jointer; C. Cakebread, leading hand; and C. Buckmaster, cable hand, also left for shore in the cutter; these hands are to assist Mr. Crouch with work of fitting up electrical apparatus and the laying of some land-line cable at St. Louis.
6.10	Mr. J. F. Lumsden returned to ship with the information that the Port Authorities had refused permission to land any stores after 5 p.m.
7.10	Mr. A. P. Crouch returned to ship with the information that the Port Officials have now granted permission for twelve packages of stores to be landed this evening ready for the train leaving for St. Louis at 6 a.m. to-morrow.
8.0	Messrs. Crouch and Lumsden, with Molt, Cakebread, and Buckmaster, left for shore, taking with them the drum of land-line cable and eleven packages containing the chief portion of the testing apparatus for St. Louis Hut. NOTE.—As the ship will be subject to a quarantine of at least 23 days on her return from the Brazilian coast when laying the Fernando Noronha—St. Louis Section, and as an

*Landing Electrical Stores for St. Louis.*

S.S. "SILVERTOWN."

Hour.	THURSDAY, MAY 12TH, 1892— <i>contd.</i>
P.M.	electrician will be required at St. Louis Hut for testing and speaking purposes, it has been arranged that Mr. Crouch shall remain at St. Louis during the absence of the ship.
9.30	Surf boat returned from shore with the drum of land-line cable, there being no means for landing the cable to-night.
10.30	Mr. M. H. Gray with the shore party returned to ship, no sleeping accommodation having been found on shore. During the evening tests were taken on all cable in main tank by Mr. W. Bent in the presence of Mr. E. March Webb; results satisfactory.

FRIDAY, MAY 13TH, 1892.

A.M.	
5.40	Shore party left ship to take train to St. Louis.
8.45	Some cable hands, with the remainder of electrical stores for St. Louis Hut and the drum of land-line cable, left for shore.
9.0	Messrs. M. H. Gray, F. W. Knight, and C. Cazalet left for shore to get electrical stores passed through the Custom House and put in train for St. Louis.
11.5	Cable hands returned from shore, bringing with them 23 balloon buoys, 2 sand anchors, 2 spider sheaves, 2 cork buoys, and 1 spanner, which were left at St. Louis after the landing of Shore-End there on the 7th October, 1891.
NOON.	Light N by W breeze. Fine, but cloudy. Bar. 30.076 (73° F.). Temp. 72°·8 F. dry, 68°·1 F. wet. Sea surface 66.2° F.
P.M.	
1.30	During this morning all cable in after tank has been tested by Mr. W. Bent in the presence of Mr. E. March Webb; results satisfactory.
5.45	Mr. M. H. Gray, accompanied by Capt. De Tavarnance, Capt. Compagnon, M. Bourel, M. Heiby, and the Agent of the Senegal Company came on board.
10.45	Visitors left ship with the exception of M. Bourel, Chief of the Government Telegraphs in Senegal, who remains on board during the laying of the cable at St. Louis End. During the day the cable in fore tank was tested by Mr. Bent in the presence of Mr. E. March Webb; results satisfactory.

SOUNDING BETWEEN DAKAR AND  
ST. LOUIS.

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S.S. "SILVERTOWN."

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MAY 14TH, 1892.

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# SOUNDING BETWEEN DAKAR AND ST. LOUIS.

S.S. "SILVERTOWN."

Hour.	SATURDAY, MAY 14TH, 1892.	
A.M.		
4.30	Weighed anchor and set on for St. Louis, sounding <i>en route</i> .	
	Draught of ship { Forward 28' 3". Aft 29' 0".	
6.46	Almadie Lighthouse abeam.	
NOON.	Moderate N'y breeze. Fine, but cloudy.	
	Bar. 30.090 (74° F.). Temp. 72°·3 F. dry, 68° F. wet. Sea surface 71°·3 F.	
	Position by { Lat. 15° 25'·3 N. observations { Long. 17° 23'·0 W.	
	Current observed since leaving Dakar=E, 3 N.M.=0.6 KTS	
P.M.		
3.13	Sounding { Lat. 15° 48'·1 N 1 S { Long. 17° 16'·6 W } 947 fms. gn. oz.	
4.31	T. Sounding { Lat. 15° 48'·8 N 2 S { Long. 17° 11'·5 W } 795 fms. { Bottom temp. gn. oz. { 40° F., 3.7 mm. Surface temp. 71° F.	
5.45	Sounding { Lat. 15° 49'·4 N 3 S { Long. 17° 6'·3 W } 590 fms. gn. oz.	
7.12	Sounding { Lat. 15° 57'·0 N 4 S { Long. 17° 6'·4 W } 711 fms. gn. oz.	
8.24	T. Sounding { Lat. 15° 57'·7 N 5 S { Long. 17° 1'·3 W } 434 fms. { Bottom temp. n. sn. { 44° F., 4.5 mm. Surface temp. 69°·3 F.	
9.17	Sounding { Lat. 15° 59'·3 N 6 S { Long. 16° 58'·6 W } 233 fms. n. sn.	
9.48	Sounding { Lat. 16° 0'·9 N 7 S { Long. 16° 58'·7 W } 251 fms. n. sn.	
9.53	Set on for anchorage off St. Louis.	





LAYING THE ST. LOUIS—FERNANDO  
NORONHA SECTION.

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PAYING OUT FROM ST. LOUIS HEAVY  
INTERMEDIATE AND BUOYING HEAVY  
DEEP SEA OFF ST. LOUIS.

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S.S. "SILVERTOWN."

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MAY 15TH TO MAY 16TH, 1892.

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# LAYING THE ST. LOUIS—FERNANDO NORONHA SECTION.

S.S. "SILVERTOWN."

Hour. A.M.	At St. Louis. Up to Buoy on St. Louis Heavy Intermediate.
	SUNDAY, MAY 15TH, 1892.
0.55	Sighted land right ahead, but no signs of St. Louis Light.
1.5	Let go anchor in 10 fms. Current observed since noon yesterday = N 32 W 2.2 N.M. = 0.2 KTS.
7.5	Weighed anchor and set on to the Southward.
8.30	Stopped ship off St. Louis. Madoun, native chief of canoe men, came alongside with letters for Messrs. M. H. Gray and H. C. Forde. Mr. Crouch reports that tests on the Shore-End landed here on Oct. 7th, 1891, are not quite satisfactory. NOTE.—Mr. Crouch, on arrival at St. Louis Cable Hut yesterday, found that shortly after the Brazilian Shore-End was landed and laid out at St. Louis by the "Silvertown" last October, M. Tailhand, of the Span. Nat. Tel. Co., procured natives and straightened out the bight of cable from the beach up to as far as the natives could go into the water with safety, making up into a coil all the slack cable he could get and burying it on the beach about 45 yards from Cable Hut. Mr. Crouch engaged natives to dig a trench from there to the hut, and the cable was laid in and well buried. There were about 9 feet of spare Shore End cable at the end, in Cable House.
9.40	"All ready" signal hoisted on beach.
9.48	Set on for Buoy No. 50 on end of Heavy Intermediate cable, No. 2061, let go off St. Louis in lat. 16° 3' 1 N, long. 16° 37' 7 W, on 7.10.91. TOTAL LENGTH OF CABLE LAID FROM ST. LOUIS HUT, FOR THE SENEGAL—FERNANDO DE NORONHA SECTION, AND BUOYED ON OCT. 7TH, 1891. SHORE-END, NO. 2060, SEC. "4" = 4.000 N.M. HEAVY INTERMEDIATE, NO. 2061, SEC. "4A" = 2.990 ,,  TOTAL = 6.990 N.

S.S. "SILVERTOWN."

HOUR. A.M.	At St. Louis. Up to Buoy on St. Louis Heavy Intermediate— <i>contd.</i>
	SUNDAY, MAY 15TH, 1892— <i>contd.</i>
10.15	Sighted buoy ahead.
10.45	Let go port anchor a little to seaward of buoy and sent away port surf boat to dismantle buoy.
11.6	Ship's stern now swung round close to buoy. Passed 6" rope from paying-out drum and over stern sheave to boat at buoy.
11.10	Drum rope shackled on to moorings of buoy; commenced to pick up on rope with paying-out drum.
11.25	Buoy cleared from moorings.
11.30	Buoy hoisted on board forward.
11.35	Chain of moorings coming inboard.
11.40	Mushroom of moorings at stern. Surf boat hoisted up.
11.48	Cable leading under ship's stern. Ran bight of rope from starboard quarter round cable to keep it clear of ship's propeller.
11.53	End of cable (Heavy Intermediate, No. 2061, Sec. "4A," indiarubber core) came inboard over stern sheave; cable bears signs of chafing against propeller.
NOON.	<p>Light NW breeze. Fine and clear. Hazy horizon.</p> <p>Bar. 30.185 (72° F.). Temp. 70°·5 F. dry, 67°·4 F. wet.</p> <p>Sea surface 68° F. Temp. in cable tanks=Fore tank 60° F., main tank 62° F., after tank 61° F.</p>
	At Buoyed End of St. Louis Heavy Intermediate
	Took a series of temperature soundings:—
	T. Surface temp. 66°·4 F. (?).
	5 fms. below surface temp. 66°·4 F.
	10 " " " " 62°·9 F.
	15 " " " " 62°·0 F., 7·9 mm.
	19 " " " " 62°·0 F., 7·85 mm.
	Depth of water at this position 21 fms.
P.M. 0.4	Some strain coming on cable. Stopped heaving in; cable still chafing against ship's propeller. Hauled in on the quarter line to clear cable from propeller.

S.S. "SILVERTOWN."

Hour. P.M.	At Buoyed End of St. Louis Heavy Intermediate —contd.
	SUNDAY, MAY 15TH, 1892—contd.
0.8	Cable cleared propeller and now leading forward well underneath ship. Set about preparing to buoy end of the cable again.
0.20	Lowered surf boat again and sent it to ship's stern with Buoy 50 rigged with $\frac{5}{8}$ " bridle.
0.34	Let go end of cable attached to Buoy 50. Surf boat towing on buoy to keep it clear of ship's propeller as ship moves.
0.35	Commenced to heave up anchor so as to move ship into better position for picking up cable again. Engines "easy ahead."
0.40	Port anchor at bows, with cable across inner fluke. Stopped ship.
0.48	Let go starboard anchor, and veered chain to 45 fms.
1.8	Ran bight of a rope round cable, and slipped it clear of port anchor. Pirogue came alongside with letters for Mr. M. H. Gray and M. Bourel.
1.55	Set on "easy ahead" to bring ship nearer Buoy No. 50 on St. Louis End.
1.57	Stopped ship's engines. Buoy close by on port quarter.
2.0	Passed 6" rope from paying-out drum, over stern sheave to surf boat at buoy.
2.3	Drum rope shackled on to moorings of buoy. Commenced to heave in on rope with paying-out machine.
2.5	Slipped Buoy 50 from moorings.
2.8	End of cable still leading forward under ship. Stopped picking up on cable.
2.11	Picked up about 5 fms. of cable. Ran bight of a rope from starboard quarter round cable, so as to haul it clear of propeller.
	<b>Picking up on St. Louis Heavy Intermediate.</b>
2.14	Paid out a few fms. on St. Louis End.
2 15	Resumed picking up on St. Louis End.

S.S. "SILVERTOWN."

FOUR. Picking up on St. Louis Heavy Intermediate—*contd.*  
P.M.

SUNDAY, MAY 15TH, 1892—*contd.*

- 2.19 Cable coming in free of strain, but still leading well under ship. Lead from testing room attached to St. Louis End.
- 2.26 Kink passed off drum=0.0595 N.M. of Heavy Intermediate cable, No. 2061, picked up on St. Louis End.
- 2.27 Cable now coming in stripped of serving, evidently caused by port anchor having fouled it this morning. Stopped picking up cable.
- 2.33 Hove in 5 fms. on starboard bower chain.
- 2.34 Ran bight of a rope from port quarter round cable, and paid out on cable, so as to endeavour to dip it under ship's propeller.
- 3.6 After trying various means to clear cable from under the ship without success, decided to pass the end of the cable round to ship's bow and pick up on it with picking-up machine. Tests on cable satisfactory; seal on the end found faulty, as supposed.
- 3.22 Resealed St. Louis End, and hoisted Buoy 50 on board.
- 3.25 Passed end of a 5" rope from port picking-up drum over port bow sheave and round port side of ship to stern sheave.
- 3.27 Resumed paying out on St. Louis End over stern sheave, with paying-out drum.
- 3.33 5" rope from bow sheave bent on to end of cable (St. Louis End) on stern sheave.
- 3.36 Bight of rope and cable passed down to surf boat, under ship's stern.
- 3.38 Commenced to heave in on drum rope attached to St. Louis End in surf boat, with port picking-up drum.
- 3.46 St. Louis End brought inboard over port bow sheave and on to port picking up drum.
- 3.51 Kink came inboard. 0.0238 N.M. picked up.
- 3.58 " " 0.0418 N.M. "
- 3.59 " " 0.0597 N.M. "
- 4.0 " " 0.0716 N.M. "

S.S. "SILVERTOWN."

Hour. P.M.	Making Joint between St. Louis Heavy Intermediate and the Heavy Intermediate on Board.
	SUNDAY, MAY 15TH, 1892— <i>contd.</i>
4.0	Cable stripped of serving where anchor fouled it.
4.1	Cable now coming inboard in good condition.
4.2	Stopped picking up on St. Louis End.
4.5	Hoisted surf boat up.
4.23	Shifted cable from port bow sheave to centre bow sheave.
4.33	Bent stoppers on St. Louis End and cut cable close to port picking-up drum. 0.105 N.M. of Heavy Intermediate cable, No. 2061, Sec. "4A," cut off St. Louis End, coiled on main deck, and labelled "Piece 'A'" (afterwards stripped and the core preserved). Heavy Intermediate, No. 2061, Sec. "4A," on St. Louis End = 2.990 Picked up and cut off, damaged = 0.105 = 2.885 N.M. Length of cable from St. Louis Hut to this point .. .. = 6.990 Picked up and cut off, damaged = 0.105 = 6.885 N.M.
4.38	Lead from testing room attached to St. Louis End.
4.39	Passed 5" rope from port picking-up drum over port bow sheave and round port side of the ship to stern barks.
4.45	Hauled top end of Heavy Intermediate cable, No. 2150, part Sec. "4B," gutta-percha core, 5.000 N.M. in length, from main tank and three times round paying-out drum to stern sheave.
4.50	Bent end of Heavy Intermediate cable from main tank on to end of 5" rope from bow sheave on stern barks.
4.58	Commenced to heave in on 5" rope over port bow sheave with port picking-up drum, hauling end of Heavy Intermediate Cable from main tank over stern sheave and round port side of ship to bow sheave.
5.3	Enough Heavy Intermediate cable from main tank hauled from stern sheave and round port side of ship to bow baulks for splice with St. Louis End. Bent on stoppers.



S.S. "SILVERTOWN."

Hour.  
P.M.

**Making Joint between St. Louis Heavy Intermediate and the Heavy Intermediate on Board—contd.**

SUNDAY, MAY 15<sup>TH</sup>, 1892—contd.

5.23 Commenced to open out end of Heavy Intermediate from main tank for splice with St. Louis End.  
Length of Heavy Intermediate, No. 2150,  
part Sec. "4B," in main tank .. .. =5.000 N.M.  
Cut off for splice with St. Louis End .. .. =0.008 "

Length of Heavy Intermediate spliced on to  
St. Louis End .. .. 4.992 N.M.

5.38 Tests on St. Louis End satisfactory, commenced to open out for splice with Heavy Intermediate in main tank.

5.50 Commenced joint between Heavy Intermediate in main tank and St. Louis End.

7.15 Joint between St. Louis End and Heavy Intermediate in main tank finished. Resumed tests on the cable between ship and St. Louis Hut.

**Paying out Heavy Intermediate at St. Louis End.**

8.0 Light WNW wind. Fine, but cloudy. Calm sea.  
Bar. 30.085 (72° F.). Temp. 68°·5 F. dry, 66°·8 F. wet. Sea surface 67°·8 F.

Tests on cable to St. Louis satisfactory. Commenced splice between St. Louis End and Heavy Intermediate in main tank.

8.46 Splice between St. Louis End and Heavy Intermediate in main tank finished. Set about preparing to slip bight of cable from bow sheave and to start paying out over stern sheave.

9.4 Commenced to heave up anchor. Hoisted jib to cant ship's head round.

9.8 Commenced veering away on bight of cable, as required, over bow sheave.

9.18 Anchor at bows. Moving engines as required to get ship round on to course.

9.30 Let go bight splice of cable from bow sheave. Set on ahead.

Position { Lat. 16° 3'·1 N.  
Long. 16° 37'·6 W.

9.35 Commenced to pay out on cable over stern with engine of paying-out machine.



*Laying the St. Louis—Fernando Noronha Section.*

S.S. "SILVERTOWN."

Hour. P.M.	Paying out Heavy Intermediate at St. Louis End— <i>contd.</i>
	SUNDAY, MAY 15TH, 1892— <i>contd.</i>
9.38	Moving ship's engines as required to get ship on course. Paying out cable according to strain.
9.45	Put engine of paying-out machine out of gear. Weight on brakes (12)=844 lbs.
9.48	SHIP ON COURSE S 85 W. 0·404 N.M. of Heavy Intermediate, No. 2150, paid out from main tank—0·008 N.M. cut off for splice. LENGTH OF CABLE PAID OUT ON CURVE MADE BY SHIP IN GETTING ON TO COURSE=0·396 N.M. Position { Lat. 16° 3'·1 N. Long. 16° 38'·1 W.
9.51	Increased ship's engines to 28 revs. per min.=about 4 KTS.
10.0	0·940 N.M. of Heavy Intermediate paid out. Drum=20½ revs. per min.=3·7 KTS. Ship's engines=26 revs. per min. Weight on brake levers=844 lbs. TOTAL CABLE LAID FROM ST. LOUIS HUT=7·825 N.M. Dynamometer=6 to 8 cwt. Patent log=0·4 N.M. Depth=25 fms.
10.20	Increased ship's engines to 30 revs. per min.
10.30	3·182 N.M. of Heavy Intermediate paid out. Patent log= 2·5 N.M. Depth=27 fms. Drum=26½ revs. per min.=4·6 KTS. Ship's engines=31 revs. per min. Weight on brake levers=884 lbs. Dyna- mometer=7½ cwt. TOTAL CABLE LAID FROM ST. LOUIS HUT=10·067 N.M. Paying out Light Intermediate at St. Louis End.
10.53	SPLICE between Heavy Intermediate, No. 2150, part Sec. "4B," and Light Intermediate, No. 2149, part Sec. "4c," from main tank, passed off drum. Patent log=4·3 N.M. Heavy Intermediate, No. 2150, part Sec. "4B," paid out by Drum and Factory measure- ments .. .. =5·000 N.M. Cut off for splice .. .. =0·008 ,, = 4·992 N.M.
	NOTE.—The Factory and paying-out drum measurements of this piece of Heavy Intermediate agree exactly. Depth=30 fms. TOTAL CABLE LAID FROM ST. LOUIS HUT=11·877 N.M.

S.S. "SILVERTOWN."

HOUR. P.M.	Paying out Light Intermediate at St. Louis End.
	SUNDAY, MAY 15TH, 1892— <i>contd.</i>
10.53	Position { Lat. 16° 3' 0 N. of splice { Long. 16° 42' 6 W.
11.0	0.599 N.M. of Light Intermediate, No. 2149, part Sec. "4C," paid out from main tank. Patent log=4.9 N.M. Depth=30 fms. Drum=28 revs. per min.=4.9 KTS. Ship's engines=31 revs. per min. Weight on brake levers=844 lbs. Dyna- mometer=7½ cwt. TOTAL CABLE LAID FROM ST. LOUIS HUT=12.476 N.M.
11.30	3.044 N.M. of Light Intermediate, paid out from main tank. Patent log=7.3 N.M. Depth=40 fms. Drum=28 revs. per min.=4.9 KTS. Ship's engines=31 revs. per min. Weight on brake levers=844 lbs. Dyna- mometer=7½ cwt. Strophometer not working. TOTAL CABLE LAID FROM ST. LOUIS HUT=14.921 N.M.
MIDNT.	Moderate WNW breeze. Fine, but overcast and misty. Slight N'y sea and swell. Bar. 30.085 (70° F.). Temp. 66° 6 F. dry, 65° 1 F. wet. Sea surface 68° 2 F. 5.583 N.M. of Light Intermediate, paid out from main tank Patent log=9.8 N.M. Depth=50 fms. Drum=28½ revs. per min.=5.0 KTS. Ship's engines=30 revs. per min. Weight on brake levers=844 lbs. Dyna- mometer=7½ cwt. TOTAL CABLE LAID FROM ST. LOUIS HUT=17.460 N.M.
	MONDAY, MAY 16TH, 1892.
A.M. 0.30	8.113 N.M. of Light Intermediate, paid out from main tank. Patent log=12.2 N.M. Depth=60 fms. Drum=28½ revs. per min.=5.0 KTS. Ship's engines=30 revs. per min. Weight on brake levers=844 lbs. Dyna- mometer=7½ cwt. TOTAL CABLE LAID FROM ST. LOUIS HUT=19.990 N.M.
1.0	10.659 N.M. of Light Intermediate, paid out from main tank Patent log=14.7 N.M. Depth=70 fms. Drum=29½ revs. per min.=5.2 KTS. Ship's engines=30 revs. per min. Weight on brake levers=844 lbs. Dyna- mometer=6 to 7 cwt. TOTAL CABLE LAID FROM ST. LOUIS HUT=22.536 N.M.

S.S. "SILVERTOWN."

Hour.	Paying out Light Intermediate at St. Louis End— <i>contd.</i>
A.M.	MONDAY, MAY 16TH, 1892— <i>contd.</i>
1.17	<p>12.141 N.M. of Light Intermediate, paid out from main tank.  Patent log=16.0 N.M.  TOTAL CABLE LAID FROM ST. LOUIS HUT=24.018 N.M.  Depth=70 fms.  CHANGED COURSE TO S 58 W.  CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, S 85 W (MADE GOOD S 87 W)=16.737 N.M.  DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 85 W (MADE GOOD S 87 W)=16.050 N.M.  Slack=4.27%.</p>
1.30	<p>Position { Lat. 16° 2' 5 N.  Long. 16° 54' 7 W.</p> <p>13.257 N.M. of Light Intermediate, paid out from main tank.  Patent log=17.1 N.M.  Depth=72 fms.  Drum=32 revs. per min.=5.6 KTS. Ship's engines=30 revs. per min. Weight on brake levers=844 lbs. Dynamometer=5 cwt.  TOTAL CABLE LAID FROM ST. LOUIS HUT=25.134 N.M.</p>
	<b>Paying out the St. Louis Heavy Deep Sea.</b>
1.51	<p>SPLICE between Light Intermediate, No. 2149, part Sec. "4c" and Heavy Deep Sea, No. 2148, part Sec. "1," passed off drum from main tank.</p> <p>Light Intermediate, No. 2147, part Sec. "4c,"  paid out by Drum measurement .. .. =15.956 N.M.  Light Intermediate, No. 2147, part Sec. "4c,"  Length, by Factory measurement. . . . =15.990 ,,</p> <p style="text-align: right;">Difference = 0.034 N.M.</p> <p>TOTAL CABLE LAID FROM ST. LOUIS HUT=27.867 N.M.  Position of { Lat. 16° 1' 2 N.  splice { Long. 16° 57' 2 W.  Depth=220 fms.</p>
1.54	<p>Decreased ship's engines to 28 revs. per min. Increased weight on brake levers to 1116 lbs. Water deepening rapidly.</p>
2.0	<p>1.009 N.M. of Heavy Deep Sea, No. 2148, part Sec. "1," paid out from main tank. Patent log=19.7 N.M.  Depth=190 fms.</p>

S.S. "SILVERTOWN."

Hour.	Paying out the St. Louis Heavy Deep Sea— <i>contd.</i>
A.M.	MONDAY, MAY 16TH, 1892— <i>contd.</i>
	Drum=30 revs. per min.=5·3 kts. Ship's engines=30 revs. per min. Weight on brake levers=1116 lbs. Dynamometer=5 cwt. TOTAL CABLE LAID FROM ST. LOUIS HUT=28·876 N.M.
2.4	Increased weight on brake levers to 1344 lbs.
2.30	3·911 N.M. of Heavy Deep Sea, paid out from main tank. Patent log=22·1 N.M. Depth=434 fms. Drum=32 revs. per min.=5·6 kts. Ship's engines=28 revs. per min. Weight on brake levers=1344 lbs. Dynamometer=14 cwt. TOTAL CABLE LAID FROM ST. LOUIS HUT=31·778 N.M.
2.35	Increased weight on brake levers to 1410 lbs.
2.53	" " " 1476 "
3.0	6·678 N.M. of Heavy Deep Sea, paid out from main tank. Patent log=24·4 N.M. Depth=460 fms. Drum=31 revs. per min.=5·48 kts. Ship's engines=28 revs. per min. Weight on brake levers=1476 lbs. Dynamometer=12 cwt. TOTAL CABLE LAID FROM ST. LOUIS HUT=34·545 N.M.
3.30	9·657 N.M. of Heavy Deep Sea, paid out from main tank. Patent log=26·5 N.M. Depth=510 fms. Drum=33 revs. per min.=5·8 kts. Ship's engines=28 revs. per min. Weight on brake levers=1476 lbs. Dynamometer=16 cwt. TOTAL CABLE LAID FROM ST. LOUIS HUT=37·524 N.M.
4.0	Light NW by W wind. Overcast and misty. Slight N'ly swell. Bar. 30·060 (68° F.). Temp. 65°·8 F. dry, 64°·0 F. wet. Sea surface 68°·3 F. 12·592 N.M. of Heavy Deep Sea, paid out from main tank. Patent log=28·7 N.M. Depth=700 fms. Drum=33 revs. per min.=5·9 kts. Ship's engines=28 revs. per min. Weight on brake levers=1476 lbs. Dynamometer=20 cwt. TOTAL CABLE LAID FROM ST. LOUIS HUT=40·459 N.M.

*Laying the St. Louis—Fernando Noronha Section.*

S.S. "SILVERTOWN."

Hour.	Paying out the St. Louis Heavy Deep Sea— <i>contd.</i>
A.M.	MONDAY, MAY 16TH, 1892— <i>contd.</i>
4.30	15.339 N.M. of Heavy Deep Sea, paid out from main tank Patent log=30.9 N.M. Depth=684 fms. Drum=31 revs. per min.=5.48 KTS. Ship's engines= 28 revs. per min, Weight on brake levers=1476 lbs. Dynamometer=20 cwt. TOTAL CABLE LAID FROM ST. LOUIS HUT=43.206 N.M.
4.31	Approaching end of Heavy Deep Sea in main tank. Set about preparing to buoy. Increased weight on brake levers to 1843 lbs.
4.39	Stopped ship's engines.
4.50	Stopped ship. Gradually checked cable. Patent log= 31.7 N.M. Set of current since commencing to pay out cable last evening=N 30 W, 1.9 N.M.=0.3 KT.
4.53	Bent stoppers on cable on stern baulks.
5.6	Sounding { Lat. 15° 55'.0 N } 684 fms. gn. m. 8 S { Long. 17° 9'.0 W }
5.37	Testing room speaking hut, and both shore and ship testing cable. The following messages were sent from ship:— 1. "Gray to Crouch. If cable tests well after it is buoyed send off following:—Silvergray, London. Subtract instru- ment, arrange 45. Saloon. Matthew, Sixteenth." 2. "Forde to Clark Forde Taylor, London. May 16th, 5 a.m. About to buoy 45 miles from St. Louis." Received the following message:—"Crouch to Gray. Very little surf on beach."
	<b>Buoying the St. Louis Heavy Deep Sea.</b>
5.55	Tests on St. Louis End satisfactory, set about sealing the end in main tank.
6.13	End of cable sealed. Eased stoppers on cable on stern baulks, and lifted brakes.
6.15	Moving ship's engines and lifting brakes as required to get end of cable on to stern baulks.
6.22	Bent slip rope on to cable at stern.

S.S. "SILVERTOWN."

Hour.  
A.M.

Buoying the St. Louis Heavy Deep Sea—*contd.*

MONDAY, MAY 16TH, 1892—*contd.*

6.26 End of St. Louis End, Heavy Deep Sea cable, No. 2148, part Sec. "1," from main tank, passed off drum.

Length, by Factory measurement, of Heavy Deep Sea, No. 2148, part Sec. "1," paid out from main tank .. .. = 16·990 N.M.  
Length, by paying-out drum .. .. = 16·976 N.M.

DIFFERENCE = 0·014 N.M.

TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM ST. LOUIS HUT TO THIS BUOY, FOR THE SENEGAL—FERNANDO NORONHA SECTION.

Shore-End, No. 2060, Sec. "4" = 4·000 N.M., I. R. Core Heavy Intermediate, No. 2061, Sec.

"4A" .. .. = 2·885 " " "

Heavy Intermediate, No. 2150, part Sec. "4B" .. .. = 4·992 " G. P. "

Light Intermediate, No. 2149, part Sec. "4c" .. .. = 15·990 " " "

Heavy Deep Sea, No. 2148, part Sec. "1" .. .. = 16·990 " " "

44·857 N.M.

CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE S 58 W (MADE GOOD S 61½ W) = 20·839 N.M. (CORRECTED TO 16·879 N.M., 11.9.92).

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 58 W (MADE GOOD S 61 W) = 15·8 N.M. (CORRECTED TO 13·700 N.M., 11.9.92).

Slack = 31·9°/.

6.27 Set about bending mooring chain of Buoy 20 on to St. Louis End on stern baulks.

6.36 Let go St. Louis End from stern baulks, and commenced lowering away on moorings of buoy over port bow sheave with port picking-up drum.



Hour.  
A M.

**Buoying the St. Louis Heavy Deep Sea—*contd.***

MONDAY, MAY 16TH, 1892—*contd.*

- 7.20 Let go Buoy 20 R (flag R between 2 discs on flagstaff) on St. Louis End.  
 Position { Lat.  $15^{\circ} 55' 0''$  N.  
 { Long.  $17^{\circ} 9' 0''$  W.  
 Moorings of buoy:—  
 $\frac{3}{4}$ " bridle.  
 30 fms.  $\frac{3}{4}$ " chain. (Lost 9.9.92.)  
 4 200-fm. lengths of  $4'' \times 4''$  buoy rope. (Part lost 9.9.92.)  
 1 20-fm. side rope.  
 4 cwt. mushroom. (Lost 9.9.92.)
- 7.30 Set on full speed for St. Louis.
- 8.0 Light NW breeze. Fine, but cloudy. Slight N'ly swell.  
 Bar. 30.110 ( $71^{\circ}$  F.). Temp.  $67^{\circ} 8$  F. dry,  $65^{\circ} 8$  F. wet. Sea surface  $69^{\circ} 8$  F.  
 Temp. in cable tanks: fore tank  $60^{\circ}$  F., main tank  $59^{\circ}$  F., after tank  $59\frac{1}{2}^{\circ}$  F.





AT ST. LOUIS AND DAKAR.

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PUTTING DOWN MARK BUOY.

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S.S. "SILVERTOWN."

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MAY 16TH TO MAY 17TH, 1892.

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# AT ST. LOUIS AND DAKAR.

## S.S. "SILVERTOWN."

HOUR.	At St. Louis. Putting down Mark Buoy.
A.M.	MONDAY, MAY 16TH, 1892— <i>contd.</i>
11.10	St. Louis flagstaff bearing S 87 E.
NOON.	Light WNW breeze. Fine, but cloudy. Smooth sea Moderate N'y swell. Bar. 30.125 (75° F.). Temp. 70°·3 F. dry, 67°·3 F. wet. Sea surface 69°·8 F.
P.M.	Temp. in cable tanks: fore tank 60° F., main tank 59° F., after tank 59½° F.
0.10	Let go port anchor in 7 fms. of water off St. Louis.
0.30	Madoun, native chief (Chef des Piroguiers), came alongside with letters.
1.20	Messrs. A. P. Crouch, H. B. Forde, J. F. Lumsden, and C. Barret, with Cakebread and Buckmaster (cable hands) and Molt (joiner) returned to ship. M. Tailhand, of the Spanish National Telegraph Company, at St. Louis, also came on board. Mr. Crouch reports that the tests on the cable laid out by ship this morning are very satisfactory.
2.25	Mr. A. P. Crouch, accompanied by M. Bourel, chief of Government Telegraphs, who joined ship at Dakar, and M. Tailhand left for shore. Weighed anchor and set on to place a mark buoy near Buoy 20 R, let go at 7.20 a.m. on St. Louis End of the Senegal—Fernando Noronha Section.
6.15	Sighted Buoy 20 R.
6.55	Buoy 20 R abeam. Distance run from anchorage by patent log=39 N.M. Changed course to S 45 E for two miles.
7.20	Stopped ship. Commenced to lower moorings of mark buoy.
7.31	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <b>T.</b> Sounding { Lat. 15° 53'·6 N } 600 fms.                    { Long. 17° 7'·6 W } gn. m. </div> <div style="font-size: 3em; margin-right: 10px;">{</div> <div> Bottom temp.  41°·3 F.,  3·98 mm.  Surface temp.  70°·1 F. </div> </div>

Hour.	At St. Louis. Putting down Mark Buoy.— <i>contd.</i>
A.M.	MONDAY, MAY 16TH, 1892— <i>contd.</i>
7.58	Let go Mark Buoy 40, red flag under 1 disc on flagstaff. Position { Lat. 15° 53'·6 N } Approx. { Long. 17° 7'·6 W }
	Moorings of buoy:— $\frac{5}{8}$ " bridle. 20 fms. $\frac{3}{4}$ " chain. 4 200 fms. lengths of 3 × 3 buoy rope. 20 fms. side rope 4 × 4. 1 4 cwt. 1 qr. mushroom.
8.0	Moderate NW breeze. Fine and clear. Moderate S'ly swell. Bar. 30·050 (71° F.). Temp. 67°·9 dry, 66° F. wet. Sea surface 70°·1 F. Temp. in cable tanks: fore tank 60° F., main tank 59° F, after tank 59°·5 F. Set on full speed for Dakar.
	At Dakar.
	TUESDAY, MAY 17TH, 1892.
3.15	Sighted Cape Verd Light bearing S 5 W.
1.39	Almadie Light abeam. Set since midnight=N 15 E, 3·5 N.M.=0·4 KT.
6.30	Let go anchor off Dakar in 6½ fms. of water.
6.37	Doctor of port came alongside and granted pratique.
8.0	Light NW breeze. Fine and clear. Bar. 30·135 (70° F.). Temp. 70° F. dry, 66°·3 F. wet. Sea surface 66° F. Temp. in cable tanks: fore tank 60° F, main tank 58° F, after tank 59° F.
8.31	Capt. Thomson and Mr. B. C. Combe left for shore to take sights.
9.15	Messrs. M. H. Gray and H. P. Daley left for shore with mail and telegrams.
10.30	M. Fauvel, agent for the Messagerie Maritime Company in Dakar, visited ship.
NOON.	Light NNW breeze. Fine and clear. Bar. 30·145 (72° F.). Temp. 73°·8 F. dry, 67° F. wet. Sea surface 69°·9 F. Temp. in cable tanks: fore tank 63½° F. main tank 60° F, after tank 61° F.

SOUNDING BETWEEN SENEGAL AND  
FERNANDO NORONHA.

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“S.S. SILVERTOWN.”

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MAY 17TH TO MAY 26TH, 1892.

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FERNANDO NORONHA.

S.S. "SILVERTOWN."

Hour.	TUESDAY, MAY 17 <sup>TH</sup> , 1892— <i>contd.</i>		
NOON.	Weighed anchor and set on for Fernando Noronha Island, sounding <i>en route</i> .		
	Draught { Forward 27' 10". of ship { Aft 28' 5".		
P.M.			
0.35	Cape Manuel abeam.		
8.0	Moderate N'y wind. Fine and clear.		
	Bar. 30·120 (73° F.). Temp. 69°·8 F. dry, 66°·2 F. wet.		
	Sea surface 71°·5 F.		
	Temp. in cable tanks: fore tank 63° F., main tank 60° F., after tank 61° F.		
10.12	T. Sounding { Lat. 14° 10'·2 N 10 S { Long. 18° 43'·1 W	{ 1789 fms. cl. capped with glob. oz.	{ Bottom temp. 36°·8 F., 3·17 mm. Surface temp. 71°·2 F.
WEDNESDAY, MAY 18 <sup>TH</sup> , 1892.			
A.M.			
7.30	Stopped ship to take		
	Sounding { Lat. 13° 9'·4 N 11 S { Long. 19° 32'·2 W	{ 2252 fms. m. Lost 1250 fms. of wire (".04 dia.), 1 Silvertown tube, and 1 deep sea thermo- meter No. 87854.	
NOTE.—Ship drifted 3 N.M. SE while stopped for Sounding No. 11.			
8.0	Light NNW breeze. Fine and clear.		
	Bar. 30·150 (73° F.). Temp. 72° F. dry, 68°·3 F. wet. Sea surface 73° F.		
	Temp. in cable tanks: fore tank 63° F., main tank 60° F., after tank 61° F.		

## S.S. "SILVERTOWN."

HOUR.	WEDNESDAY, MAY 18TH, 1892— <i>contd.</i>	
NOON.	Light N'y breeze. Fine and clear. Smooth sea. Slight NW swell.	
	Bar. 30·165 (75° F.). Temp. 71°·5 F dry, 67°·6 F wet. Sea surface 74° F.	
	Position by { Lat. 12° 54'·9 N. observations { Long. 19° 41'·6 W.	
	Temp. in cable tanks: fore tank 64½° F., main tank 61° F., after tank 61½° F.	
P.M.	8.0	
	Light N'y wind. Fine and clear. Smooth sea. Bar. 30·150 (74° F). Temp. 72°·5 F. dry, 69°·3 F. wet. Sea surface 75°·3 F.	
	Temp. in cable tanks: fore tank 64½° F., main tank 61° F., after tank 61½° F.	
11.18	T. Sounding { Lat. 11° 38'·7 N 12 S { Long. 20° 42'·4 W	
	{ 2732 fms. { Bottom temp. { gn.cl.cap- { 36°·9 F., ped with { 1·65 mm. { glob. oz. { Surface temp. { 77°·0 F.	

## THURSDAY, MAY 19TH, 1892.

A M.	6.0	
	Commenced pumping sufficient water into main and after tanks to completely cover cable, a quantity of the water having leaked out.	
	8.0	
	Light N'y wind. Fine and clear. Smooth sea. Bar. 30·150 (75° F.). Temp. 74°·9 F. dry, 71°·7 F. wet. Sea surface 78°·5 F.	
	Temp. in cable tanks: fore tank 67° F., main tank 62½° F., after tank 63° F.	
	9.0	
	Finished pumping water into main and after cable tanks fore tank left dry.	
NOON.		
	Light N by E breeze, Fine and clear. Calm sea. Bar. 30·175 (81° F.). Temp. 79°·8 F. dry, 74°·5 F. wet. Sea surface 79° F.	
	Position by { Lat. 10° 3'·0 N. observations { Long. 21° 45'·0 W.	
	Temp. in cable tanks: fore tank 70° F., main tank 67° F., after tank 66° F.	
	Current observed since 8 p.m. yesterday=S 76 W, 9·7 N.M.=0·6 KT.	



## S.S. "SILVERTOWN."

HOUR.

THURSDAY, MAY 19TH, 1892—*contd.*P.M.  
2.35T. Sounding { Lat.  $9^{\circ} 53' \cdot 6$  N  
13 S { Long.  $21^{\circ} 42' \cdot 3$  W } 2830 fms. gl. oz.

Fms. from Bottom.	Max. Temp.	mm.	Min. Temp.	mm.
750	$79^{\circ} \cdot 2$	10.15	$36^{\circ} \cdot 6$	1.7
500	$78^{\circ} \cdot 9$	10.24	$36^{\circ} \cdot 6$	2.1
250	$79^{\circ} \cdot 0$	9.82	index moved	—
Bottom	$78^{\circ} \cdot 6$	9.29	$36^{\circ} \cdot 6$	1.59
Temp. at surface = $79^{\circ}$ F.				

6.0 Temp. in cable tanks: fore tank  $69^{\circ}$  F., main tank  $66^{\circ}$  F.,  
after tank  $66\frac{1}{2}^{\circ}$  F.8.0 Light NE wind. Fine and clear.  
Bar. 30.155 ( $79^{\circ}$  F.). Temp.  $78^{\circ}$  F. dry,  $74^{\circ}$  F., wet. Sea  
surface  $78^{\circ}$  F.

FRIDAY, MAY 20TH, 1892.

A.M.  
2.37T. Sounding { Lat.  $8^{\circ} 31' \cdot 9$  N  
14 S { Long.  $22^{\circ} 31' \cdot 8$  W } 2400 fms. gl. oz.

Fms. from Bottom.	Max. Temp.	mm.	Min. Temp.	mm.
1000	$76^{\circ} \cdot 3$	10.42	$37^{\circ} \cdot 8$	2.05
750	$77^{\circ} \cdot 0$	10.2	$37^{\circ} \cdot 3$	2.25
Bottom	$75^{\circ} \cdot 5$	8.7	$36^{\circ} \cdot 7$	1.65
Temp. at surface = $78^{\circ} \cdot 7$ F.				

NOTE.—Some delay was occasioned in taking this sounding owing to the sinker not detaching till it had been picked up to within 200 fms. of the surface, the heavy strain causing the bolts holding the side plates of the drum to break; this necessitated changing the drum.

5.28 Current observed since noon yesterday = S 45 W.,  
 $8.5$  N.M. =  $0.5$  KT.8.0 Moderate NNE breeze. Fine and clear. Smooth sea,  
slight N'y swell.Bar. 30.155 ( $79^{\circ}$  F.). Temp.  $77.5^{\circ}$  F. dry,  $73.3^{\circ}$  F. wet. Sea  
surface  $80^{\circ}$  F.Temp. in cable tanks: fore tank  $69^{\circ}$  F.; main tank  
 $66^{\circ}$  F., after tank  $65\frac{1}{2}^{\circ}$  F.

*Sounding between Senegal and Fernando Noronha.*

S.S. "SILVERTOWN."

Hour.	FRIDAY, MAY 20TH, 1892— <i>contd.</i>
NOON.	<p>Similar weather.</p> <p>Bar. 30·145 (81° F.). Temp. 78°·8 F. dry, 74°·3 F. wet.</p> <p>Sea surface 80°·6 F.</p> <p>Position by { Lat. 7° 36'·5 N. observations { Long. 23° 18'·1 W.</p> <p>Temp. in cable tanks: fore tank 70° F., main tank 66° F., after tank 65½° F.</p> <p>Current observed since 5.28 a.m.=E 2·0 N.M.=0·3 KT.</p>
P.M. 4.50	<p><b>T.</b> Sounding { Lat. 7° 8'·1 N. 15 S { Long. 23° 43'·8 } 2214 fms. gl. oz.</p> <p>Temp. of surface water=80°·8 F.</p> <p>" 10 fms. below surface=80°·5 F., 13·6 mm.</p> <p>" 20 " " " =79°·5 F., 13·34 mm.</p> <p>" 40 " " " =72°·0 F., 11·4 mm.</p> <p>" 50 " " " =62°·4 F., 7·2 mm.</p> <p>" 100 " " " =54°·7 F., 6·73 mm.</p> <p>Temp. at bottom=Max. 81° F., 9·75 mm. Min. 36°·6 F., 1·58 mm.</p> <p>NOTE.—While heaving in the wire the strain caused several of the bolts holding the side plates of the drum to break.</p> <p>Temp. in cable tanks: fore tank 69° F., main tank 66° F., after tank 65½° F.</p>
6.0	<p>Moderate NE breeze. Fine and clear. Smooth sea.</p>
8.0	<p>Bar. 30·175 (80 F.). Temp. 78°·8 F. dry, 74°·8 F. wet. Sea surface 80°·1 F.</p> <p>During to-day all cable in tanks have been tested; results satisfactory.</p>
	SATURDAY, MAY 21st, 1892.
A.M. 8.0	<p>Moderate N by W breeze. Fine, but cloudy. Slight following sea.</p> <p>Bar. 30·101 (81° F.). Temp. 79°·3 F. dry, 75°·7 F. wet. Sea surface 81° F.</p> <p>Temp. in cable tanks: fore tank 71° F., main tank 66° F., after tank 65½° F.</p>
NOON.	<p>Moderate NNE breeze. Fine and clear.</p> <p>Bar. 30·105 (82° F.). Temp. 80°·8 F. dry, 76°·3 F. wet. Sea surface 81°·3 F.</p> <p>Position by { Lat. 4° 52'·8 N. observations { Long. 25° 21'·4 W.</p>

## S.S. "SILVERTOWN."

HOUR.

SATURDAY, MAY 21<sup>ST</sup>, 1892—*contd.*

P.M.

Current observed since noon yesterday =  $\dot{N}$  44 W, 8.4 N.M. = 0.35 KT.

Temp. in cable tanks: fore tank 71° F., main tank 66° F., after tank 66° F.

During the morning all cable in tanks tested; results satisfactory.

4.30

T. Sounding { Lat. 4° 21' 0 N } 2316 fms.  
16 S { Long. 25° 31' 7 W } gl. oz.

		Bottom Temp.	
Max.	mm.	Min.	mm.
82° 0	11.17	36° 6	2.06

Surface temp. 81° 4 F.

6.0

Temp. in cable tanks: fore tank 70° F., main tank 66° F., after tank 66 F.

8.0

Moderate NNE breeze. Fine, but cloudy. Smooth sea with slight confused swell.

Bar. 30.053 (82° F.). Temp. 80° 2 F. dry, 76° 4 F. wet. Sea surface 81° 1 F.

SUNDAY, MAY 22<sup>ND</sup>, 1892.

A.M.

3.0

Wind veered round by the Eastward to SE, with dull rainy-looking weather.

6.27

T. Sounding { Lat. 2° 53' 2 N } 2410 fms.  
17 S { Long. 26° 33' 3 W } gl. oz.

		Bottom Temp.	
Max.	mm.	Min.	mm.
77° 6	10.0	36° 6	2.1

Surface temp. 81° 8 F.

8.0

Moderate SE breeze. Fine, but cloudy. Hot sultry weather. Slight SE swell.

Bar. 30.105 (79° F.). Temp. 80° F. dry, 77° 3 F. wet. Sea surface 81° 6 F.

Temp. in cable tanks: fore tank 71° F., main tank 66° F., after tank 66° F.

11.0

Muster and boat stations.

NOON.

Light SE breeze. Fine, but cloudy and threatening. Close sultry weather. Heavy rain at times.

Bar. 30.095 (80° F.). Temp. 81° F. dry, 76° 5 F. wet. Sea surface 82° F

*Sounding between Senegal and Fernando Noronha.*

S.S. "SILVERTOWN."

SUNDAY, MAY 22<sup>ND</sup>, 1892—*contd.*

Hour.	Position by observations { Lat. 2° 25'·9 N. Long. 27° 4'·4 W.
P.M.	Temp. in cable tanks: fore tank 70° F., main tank 66° F., after tank 66° F. Current observed since noon yesterday = N 31 E, 10·9 N.M. = 0·45 KT. (counter current).
4.36	T. Sounding { Lat. 2° 3'·1 N 18 S { Long. 27° 31'·6 W } 1850 fms.
	Bottom Temp. Max. mm. Min. mm. 81°·0 11·48 43°·5 3·59
	NOTE.—Very heavy rain fell while taking this sounding, and a strong current from S of E experienced. Temp. of rain = 76°·2 F. " " surface water before rain fell = 84°·2 F. " " " " after " " = 83°·0 F. All { " 10 fms. below surface before rain fell = 81°·3 F., taken { 13·82 mm. within { " 30 fms. below surface before rain fell = 81°·9 F., 1/2 hour { 14·0 mm. " 5 fms. below surface after rain fell = max. 81° F., min. 77°·4 F., 12·8 mm.
6 0	Temp. in cable tanks: fore tank 70° F., main tank 66° F., after tank 65½° F.
7.52	T. Sounding { Lat. 1° 54'·8 N 19 S { Long. 27° 45'·0 W } 1802 fms. h. with m.
	Bottom Temp. Max. mm. Min. mm. 78°·0 9·17 36°·7 1·67
8.0	Surface temp. 82°·3 F. Light variable wind. Fine, but overcast and gloomy. Bar. 30·030, 80° F. Temp. 78°·5 F. dry, 76°·9 F. wet. Sea surface 82°·1 F.
11.43	T. Sounding { Lat. 1° 40'·4 N 20 S { Long. 27° 37'·9 W } 2073 fms. stf. m.
	Bottom Temp. Max. mm. Min. mm. 78°·8 10·05 47°·25 4·63
	Surface temp. 81°·2 F.
MIDNT.	Moderate S'y wind. Fine, but overcast.

*Sounding between Senegal and Fernando Noronha.*

S.S. "SILVERTOWN."

Hour.  
A.M.

MONDAY, MAY 23<sup>RD</sup>, 1892.

3.56

T. Sounding { Lat. 1° 22'·1 N } 1775 fms.  
21 S { Long. 28° 0'·7 W } gl. oz.

Bottom Temp., Therm. No. 87855.

Max.	mm.	Min.	mm.
78°·5	9·23	48°·7	4·85

Surface temp. 81°·8 F.

NOTE.—In same position took Temps.

Therm. No.	Depth fms.
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87858	1025	{ Min. 38°·75 F., 2·30 mm. Max. 74°·8 F., 10·1 mm.
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87857	1275	{ Min. 37°·8 F., 2·41 mm. Max. 79°·8 F., 10·42 mm.
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87855	1525	{ Min. 48°·8 F., 4·9 mm. Max. 79°·0 F., 9·32 mm.
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Surface temp. 82° F.

5.33

Position of ship { Lat. 1° 22'·5 N.  
by stars { Long. 28° 3'·6 W.

Current (equatorial) observed since noon yesterday = N 81 W, 21·7 N.M = 1·2 KT.

8.0

Moderate S'ly breeze. Fine and clear.

Bar. 30·130 (81° F.). Temp. 80°·5 F. dry, 75°·3 F. wet. Sea surface 82°·3 F.

Temp. in cable tanks: fore tank 72° F., main tank 66° F., after tank 66½° F.

9.15

T. Sounding { Lat. 1° 6'·4 N } 1910 fms.  
22 S { Long. 28° 8'·3 W } stf. m.

Bottom Temp., Therm. No. 87857.

Max.	mm.	Min.	mm.
79°·3	10·35	37°·2	2·23

Surface temp. 82° F.

Thermometer No. 87858 was also lowered to the bottom in this sounding, but the index moved, rendering the reading useless.

NOON.

Moderate ESE breeze. Fine and clear. Hot sultry weather. Smooth sea with slight S'ly swell.

Bar. 30·125 (81° F.). Temp. 80°·4 F. dry, 75°·8 F. wet. Sea surface 82°·2 F.

*Sounding between Senegal and Fernando Noronha.*

S.S. "SILVERTOWN."

Hour.  
P.M.

MONDAY, MAY 23<sup>RD</sup>, 1892—*contd.*

Position by { Lat.  $1^{\circ} 16' \cdot 7$  N.  
observations { Long.  $27^{\circ} 58' \cdot 6$  W.  
Current observed since 5.33 a.m. = W,  $9 \cdot 4$  N.M. =  $1 \cdot 4$  KT.  
Temp. in cable tanks: fore tank  $73^{\circ}$  F., main tank  $67^{\circ}$  F.,  
after tank  $67^{\circ}$  F.

2.16 Sounding { Lat.  $1^{\circ} 24' \cdot 3$  N } 1884 fms.  
23 S { Long.  $27^{\circ} 46' \cdot 8$  W }  
While picking up, thermometers Nos. 87857 and 87853, 1  
Silvertown tube, and 1554 fms. of ".034 wire were lost.  
Surface temp.  $82^{\circ} \cdot 2$  F.  
Temp. 10 fms. below surface = Min.  $78^{\circ} \cdot 9$  F., max.  $81^{\circ} \cdot 3$  F.,  
10.9 mm.  
Temp. 50 fms. below surface = Min.  $63^{\circ} \cdot 5$  F.,  $9 \cdot 48$  mm.,  
max.  $80^{\circ} \cdot 2$  F.,  $10 \cdot 67$  mm.

3.14 T. <sup>A</sup> Sounding { Lat.  $1^{\circ} 24' \cdot 3$  N }  $\frac{\cdot}{1873}$  fms.  
23 S { Long.  $27^{\circ} 46' \cdot 8$  W }  
Temp. at 1873 fms. below surface,  
or 11 fms. from bottom.  
Therm. No.  
87859 { Max.  $77^{\circ} \cdot 4$  F.,  $10 \cdot 15$  mm.  
Min.  $48^{\circ} \cdot 2$  F.,  $5 \cdot 13$  mm.  
87850 { Max.  $81^{\circ} \cdot 7$  F.,  $8 \cdot 8$  mm.  
Min.  $36^{\circ} \cdot 6$  F.,  $4 \cdot 49$  mm.  
Temp. by Thermometer No. { Max.  $85^{\circ} \cdot 3$  F.,  $10 \cdot 55$  mm.  
87855, 1373 fms. below surface, { Min.  $38^{\circ} \cdot 0$  F.,  $1 \cdot 96$  mm.  
or 511 fms. above bottom = .. }  
Owing to the variation in the readings of the thermometers  
it was decided to take at

5.20 T. <sup>B</sup> Sounding { Lat.  $1^{\circ} 24' \cdot 4$  N } 1957 fms. n. sn.  
23 S { Long.  $27^{\circ} 49' \cdot 3$  W }  
Bottom Temp.  
Therm. No. Position of Therm.  
87855 Top .. { Max.  $79^{\circ} \cdot 8$  F.,  $9 \cdot 5$  mm.  
Min.  $37^{\circ} \cdot 5$  F.,  $1 \cdot 75$  mm.  
87849 Second .. { Max.  $82^{\circ} \cdot 0$  F.,  $10 \cdot 0$  mm.  
Min.  $36^{\circ} \cdot 8$  F.,  $3 \cdot 3$  mm.  
87858 Bottom .. { Max.  $81^{\circ} \cdot 4$  F.,  $10 \cdot 6$  mm.  
Min.  $36^{\circ} \cdot 8$  F.,  $1 \cdot 78$  mm.

6.0 Temp. in cable tanks: fore tank  $73^{\circ}$  F., main tank  $67^{\circ}$  F.,  
after tank  $67^{\circ}$  F.  
All cable in tanks tested during the day; results satis-  
factory.

*Sounding between Senegal and Fernando Noronha.*

S.S. "SILVERTOWN."

MONDAY, MAY 23RD, 1892— <i>contd.</i>	
HOOR. P.M.	
6.27	Position of ship { Lat. $1^{\circ} 24' 0''$ N. by stars { Long. $27^{\circ} 51' 3''$ W. Current observed since noon = W, $4.7$ N.M. = $0.7$ KTS.
8.0	Light SW wind. Fine, but cloudy. Moderate S'ly swell. Bar. $30.115$ , $82^{\circ}$ F. Temp. $81^{\circ}$ F. dry, $76^{\circ} 8'$ F. wet. Sea surface $81^{\circ} 8'$ F.
10.35	T. Sounding { Lat. $1^{\circ} 12' 4''$ N. 24 S { Long. $28^{\circ} 25' 1''$ W } 1965 fms. gy. m. Bottom Temp. Therm. No. Position of Therm. 87759 Top .. { Max. $78^{\circ} 8'$ F., $10.4$ mm. 87855 Centre .. { Min. $43^{\circ} 7'$ F., $3.92$ mm. 87858 Bottom .. { Max. $80^{\circ} 8'$ F., $9.65$ mm. { Min. $41^{\circ} 1'$ F., $2.75$ mm. { Max. $79^{\circ} 7'$ F., $10.25$ mm. { Min. $41^{\circ} 1'$ F., $2.92$ mm. Temp. at surface = $81^{\circ} 7'$ F. NOTE.—The bottom water obtained in this sounding smelt strongly of iodine.
MIDNT.	Moderate ESE wind. Cloudy, with rain at times.
TUESDAY, MAY 24TH, 1892.	
A.M. 3.0	T. Sounding { Lat. $0^{\circ} 48' 4''$ N. 25 S { Long. $28^{\circ} 21' 2''$ W } 1542 fms. gl. oz. Bottom temp. { Max. $79^{\circ}$ F., $9.3$ mm. Surface temp. $81^{\circ} 7'$ F. { Min. $39^{\circ}$ F., $2.25$ mm.
5.32	Position of ship { Lat. $0^{\circ} 43' 7''$ N. by stars { Long. $28^{\circ} 42' 5''$ W. Current observed since 6.27 p.m. yesterday = N $84$ W, $20.7$ N.M. = $1.9$ KTS.
6.27	T. Sounding { Lat. $0^{\circ} 42' 9''$ N. 26 S { Long. $28^{\circ} 48' 0''$ W } 2178 fms. gl. oz. Bottom temp. { Max. $79^{\circ}$ F., $9.3$ mm. Surface temp. $81^{\circ} 6'$ F. { Min. $46^{\circ} 7'$ F., $4.5$ mm.
8.0	Moderate ESE breeze. Fine and clear. Moderate SE swell.



*Sounding between Senegal and Fernando Noronha.*

S.S. "SILVERTOWN."

Hour.  
A.M.

TUESDAY, MAY 24<sup>TH</sup>, 1892—*contd.*

Bar. 30·120 (81° F.). Temp. 80°·3 F. dry, 75°·8 F. wet. Sea surface 81°·6 F.

Temp. in cable tanks: fore tank 74° F., main tank 67° F., after tank 67½° F.

11.47

T. Sounding { Lat. 0° 30'·1 N  
27 S { Long. 28° 21'·8 W } 1989 fms. gl. oz.  
Bottom temp. { Max. 80° F., 9·5 mm.  
Surface temp. 81°·8 F. { Min. 38° F., 2·0 mm.

NOON.

Moderate E by S wind. Fine and clear. Slight SE sea and swell.

Bar. 30·140 (83° F.). Temp. 82°·3 F. dry, 76°·3 F. wet. Sea surface 81°·8 F.

Position by { Lat. 0° 29'·9 N.  
observations { Long. 28° 22'·7 W.

Current observed since 5.32 a.m.=S 81 W, 4·9 N.M.=0·7 kt. (equatorial current).

Temp. in cable tanks: fore tank 74½° F., main tank 68° F., after tank 68° F

Cable in tanks tested this morning with satisfactory results.

P.M.  
4.34

T. Sounding { Lat. 0° 30'·8 N.  
28 S { Long. 28° 58'·7 W. } 1998 fms. gl. oz.

Temp. by Top Thermometer } Max. 79° F., 9·32 mm.  
No. 87855, at bottom= .. } Min. 37°·3 F., 1·77 mm.

Temp. by Centre Thermometer } Max. 78°·3 F., 10·34 mm.  
No. 87859, at bottom= .. } Min. 42°·5 F., 3·59 mm.

Temp. by Bottom Thermometer } Max. 81°·0 F., 10·6 mm.  
No. 87858, at bottom= .. } Min. 42°·0 F., 3·17 mm.

Temp. of surface water=81°·2 F.

6.0

Temp. in cable tanks: fore tank 74° F., main tank 68° F., after tank 68° F.

6.34

Position of ship { Lat. 0° 20'·7 N.  
by stars { Long. 28° 58'·0 W.

Current observed since noon=N 81 W, 9 1 N.M.=1·4 kt. (equatorial current).

8.0

Moderate ESE breeze. Fine and clear.

Bar. 30·150 (81° F.). Temp. 81° F. dry, 75°·5 F. wet. Sea surface 81° F.



*Sounding between Senegal and Fernando Noronha.*

S.S. "SILVERTOWN."

Hour.	TUESDAY, MAY 24TH, 1892— <i>contd.</i>	
8.18	Sounding { Lat. $0^{\circ} 13' 9''$ N 29 S { Long. $28^{\circ} 55' 6''$ W } 2334 fms.	
	In heaving up lost 1550 fms. of wire ( $''\cdot 034$ dia.), 1 tube, and thermometers Nos. 87849, 87850 and 87851. Wire parted, caught at splice when running over measuring wheel.	
MIDNT.	Light ESE wind. Fine and clear.	
	WEDNESDAY, MAY 25TH, 1892.	
A.M. 0.32	T. Sounding { Lat. $0^{\circ} 6' 9''$ S 30 S { Long. $28^{\circ} 49' 2''$ W } 2321 fms. gl. oz. Bottom temp. { Max. $81^{\circ}$ F., 8.85 mm. Min. $52^{\circ}$ F., 6.4 mm. Surface temp. $79^{\circ} 6$ F.	
5.42	Position of ship { Lat. $0^{\circ} 31' 8''$ S. by stars { Long. $29^{\circ} 20' 0''$ W. Current observed since 6.34 p.m. yesterday = N 12 W, 7.9 N.M. = $0\cdot 7$ KT.	
8.0	Moderate ESE wind. Fine and clear. Bar. 30.150 ( $82^{\circ}$ F.). Temp. $79^{\circ} 3$ F. dry, $76^{\circ} 5$ F. wet. Sea surface $81^{\circ} 3$ F. Temp. in cable tanks: fore tank $74^{\circ}$ F., main tank $67^{\circ}$ F., after tank $67\frac{1}{2}^{\circ}$ F.	
11.21	T. Sounding { Lat. $1^{\circ} 3' 3''$ S 31 S { Long. $29^{\circ} 48' 5''$ W } 2437 fms. gl. oz. Bottom temp. { Max. $81^{\circ} 5$ F. Min. $43^{\circ}$ F. Surface temp. $81^{\circ} 2$ F.	
11.30	All cable in tanks tested; results satisfactory.	
NOON.	Moderate ESE breeze. Fine and clear. Slight sea and swell from the SE. Bar. 30.153 ( $81^{\circ}$ F.). Temp. $83^{\circ}$ F. dry, $77^{\circ} 3$ F. wet. Sea surface $81^{\circ} 2$ F. Position by { Lat. $1^{\circ} 2' 7''$ S. observations { Long. $29^{\circ} 48' 0''$ W. Current observed since 5.42 a.m. = N 34 E, $3\cdot 7$ N.M. = $0\cdot 6$ KT. Temp. in cable tanks: fore tank $74^{\circ}$ F., main tank $68^{\circ}$ F., after tank $68^{\circ}$ F.	

*Sounding between Senegal and Fernando Noronha.*

S.S. "SILVERTOWN."

Hour.  
P.M.

WEDNESDAY, MAY 25TH, 1892—*contd.*

6.30

Position of ship { Lat.  $1^{\circ} 40' 0''$  S.  
by stars { Long.  $30^{\circ} 29' 0''$  W.

Current observed since noon = N 21 E, 4.0 N.M. = 0.6 KT.

Stopped ship to take the following sounding and serial temperatures:—

T. Sounding { Lat.  $1^{\circ} 40' 0''$  S  
32 S { Long.  $30^{\circ} 29' 0''$  W } 2709 fms. br. m.

				Difference in	
				fms.	degs.
Temp. by Miller- Casella's Deep Sea Thermome- ter No. 87852 ..	10 fms.	below surface =	{ Min. 81°·3 F. }		
			{ Max. }		
	20 "		= { Min. 80°·2 F. }	20	1°·1
			{ Max. 81°·5 F. }		
	50 "		= { Min. 80°·2 F. }	30	0°·0
		{ Max. 81°·0 F. }			
"	100 "	=	{ Min. 60°·4 F., 8·09 mm. }	50	19°·8
			{ Max. 80°·0 F., 8·72 mm. }		
	200 "		= 49°·9 F. .. ..	100	10°·5
	450 "		= 40°·1 F. .. ..	250	9°·8
	950 "		= 39°·0 F. .. ..	500	1°·1
1450 "	= 38°·0 F. .. ..	500	1°·0		
1950 "	= 37°·2 F. .. ..	500	0°·8		
2200 "	= 36°·0 F. .. ..	250	1°·2		
2709 "	(at bottom) = 34°· F.	509	2°·0		
Temp. by Miller- Casella's Deep Sea Thermome- ter No. 87858	at bottom =	{ Min. 47° F., 4·9 mm. }			
		{ Max. 80°·8 F., 10·5 mm. }			

An attempt was made to take the temperature at 1700 fms. below surface with Negretti & Zambra's Capsizing Thermometer "S" (No. 56051), but on heaving in the thermometer, the tube was found broken, evidently crushed by the pressure.

Sea surface temp. =  $81^{\circ} 3'$  F. (at 11.20 p.m.).

8.0

Moderate E by S wind. Fine and clear. Slight sea.  
Bar. 30.150 ( $82^{\circ}$  F.). Temp  $81^{\circ} 3'$  F. dry,  $76^{\circ} 5'$  F. wet.  
Sea surface  $81^{\circ}$  F.

MIDNT.

Similar weather.

*Sounding between Senegal and Fernando Noronha.*

S.S. "SILVERTOWN."

Hour. A.M.	THURSDAY, MAY, 26TH, 1892.
0.10	Set on again, after taking No. 32 sounding and the above serial temperatures, towards Fernando Noronha Island.
8.0	Moderate ESE wind. Fine and clear. Slight sea and swell from the SE. Bar. 30·120 (82° F.). Temp. 81°·3 F. dry, 77°·2 F. wet. Sea surface 81°·5 F. Temp. in cable tanks: fore tank 74° F., main tank 68° F., after tank 68° F.
11.30	Tests taken on all cable in tanks; results satisfactory.
NOON.	Moderate ESE breeze. Fine clear weather. Slight SE sea. Bar. 30·175 (81° F.). Temp. 82°·5 F. dry, 78°·5 F. wet. Sea surface 81°·8 F. Position by { Lat. 3° 1' 7 S. observations { Long. 31° 39'·1 W. Current observed since 6·30 p.m. yesterday=S 79° E, 5·2 N.M.=0·3 KT. Temp. in cable tanks: fore tank 74° F., main tank 68° F., after tank 68° F.
P.M. 3.15	Sighted peak of Fernando Noronha Island bearing S 37° W.
4.28	T. Sounding { Lat. 3° 24'·7 S } 2241 fms. gl. oz. 33 S { Long. 32° 6'·3 W } Bottom Temp., Thermometer { Max. 84°·5 F., 11·52 mm. No. 87859= .. .. } Min. 35°·5 F., 1·7 mm. Bottom Temp., Thermometer { Max. 84°·2 F., 10·34 mm. No. 87855= .. .. } Min. 33°·8 F., 0·89 mm. Bottom Temp., Thermometer { Max. 84°·4 F., 11·22 mm. No. 87858= .. .. } Min. 33°·9 F., 0·97 mm. Temp. at surface=81°·8 F. NOTE.—The three thermometers lowered to the bottom were fastened to a frame so as to lie horizontally, as the indices of some of them are very loose, and when the thermometer is lowered vertically as heretofore, the vibration of the wire shakes the index down.



AT FERNANDO NORONHA.

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S.S. "SILVERTOWN.'

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MAY 26TH TO MAY 27TH, 1892.

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# AT FERNANDO NORONHA

## S.S. "SILVERTOWN."

Hour.	At Fernando Noronha.
	THURSDAY, MAY 26 <sup>TH</sup> , 1892— <i>contd.</i>
P.M. 6.0	Temp. in cable tanks : fore tank 74° F., main tank 68° F., after tank 68° F.
8.0	Moderate SE breeze. Fine and clear. Bar. 30.130 (81° F.). Temp. 80.5 F. dry, 76.3 F. wet. Sea surface 81° F. Current observed since noon=N 84 W, 7.3 N.M.=0.9 KT.
8 45	Since 5 p.m. ran water into after ballast tank=310 tons, as ship is down by the head a little. Commenced to run water into all cable tanks.
9.10	Moored ship with both anchors in 13 fms. of water in São Antonio Bay, Fernando Noronha Island.
11.45	Finished running water into cable tanks; cable now well covered with water.

## FRIDAY, MAY 27<sup>TH</sup>, 1892.

A.M.	
6.15	Jangada arrived alongside with letter to Mr. M. H. Gray from Mr. G. H. Bailey.
6.35	Mr. M. H. Gray sent verbal message ashore by the jangada. Cable hands turned to and lowered steam launch, and set about getting cable hut ready to send ashore. Draught { Forward 28' 10". of ship { Aft 28' 0".
6.50	Capt. Thomson and Mr. B. C. Combe left for shore to take sights for time, and on the way to take soundings in Peak Bay for ship's anchorage to land Shore-End.
7.25	Mr. G. H. Bailey, who came from Pernambuco about a week ago, came on board.

*At Fernando Noronha.*  
S.S. "SILVERTOWN."

HOUR. A.M.	At Fernando Noronha— <i>contd.</i>
9.10	Messrs. M. H. Gray, H. C. Forde, and G. H. Bailey left for shore.
	NOTE.—A stone 2-roomed cable house has been erected in Peak Bay since ship was here in September last.
9.45	Mr. Combe returned to ship.
NOON.	Moderate SE breeze. Fine clear weather.
	Bar. 30.136 (82° F.). Temp. 81° F. dry, 74°·4 F. wet. Sea surface 81°·8 F.
	Temp. in cable tanks : fore tank 77° F., main tank 72½° F., after tank 72° F.
P.M.	
5.0	The Director of the Island and staff visited the ship. Mr. G. H. Bailey, accompanied by Mr. Jones, of Messrs. Wilson, Sons, & Co., at Pernambuco, came on board for passage to Pernambuco.
	NOTE.—From the information received to-day, Mr. M. H. Gray has decided to steam direct to Pernambuco to-night.
	Draught { Forward 28' 9". of ship { Aft 28' 0".
6.0	Temp. in cable tanks : fore tank 77° F., main tank 72° F., after tank 72° F.
	Part of the cable in main and after tanks tested by Mr. Bent this afternoon ; very satisfactory results.
6.30	Hoisted up boats and prepared for sea.
10.15	Weighed anchors and set on for Pernambuco.



STEAMING FROM FERNANDO NORONHA TO  
PERNAMBUCO.

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AT PERNAMBUCO.

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S.S. "SILVERTOWN."

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MAY 28<sup>TH</sup> TO MAY 30<sup>TH</sup>, 1892.

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# STEAMING TO PERNAMBUCO.

## S.S. "SILVERTOWN."

Hour.

SATURDAY, MAY 28<sup>TH</sup>, 1892.

A.M.

0.35

Since midnight pumped a quantity of the water out of cable tanks, so that the top flakes of the cable will not be disturbed by the water as ship rolls.

5.49

Current observed since 11.10 p.m. yesterday = N 80 W, 6.7 N.M. = 1.0 KT.

8.0

Fresh SE breeze. Fine, but cloudy. Moderate SE swell. Ship rolling.

Bar. 30.160 (81° F.). Temp. 79°·3 F. dry, 76° F. wet. Sea surface 81°·1 F.

Temp. in cable tanks : fore tank 75° F., main tank 72° F., after tank 72° F.

NOON.

Fresh SE breeze. Squally at times. Moderate swell.

Bar. 30.165 (79° F.). Temp. 79°·9 F. dry, 78°·8 F. wet. Sea surface 81°·8 F.

Position by { Lat. 5° 29'·5 S.  
observations { Long. 33° 26'·2 W.

Current observed since 5.49 a.m. = nil.

Temp. in cable tanks : fore tank 75½° F., main tank 72° F., after tank 72° F.

P.M.

6.0

Temp. in cable tanks : fore tank 75½° F., main tank 72° F., after tank 72° F.

8 0

Fresh SE breeze. Cloudy and squally, with rain at times. Moderate SE sea and swell.

Bar. 30.110 (79° F.). Temp. 79°·3 F. dry, 75°·5 F. wet. Sea surface 80°·8 F.

SUNDAY, MAY 29<sup>TH</sup>, 1892.

A.M.

8.0

Temp. in cable tanks : fore tank 74° F., main tank 72° F., after tank 72° F.

8.8

Olinda Lighthouse bearing S 37° W.

Current observed since noon yesterday = N 23° W, 11.0 N.M. = 0.55 KT.

*At Pernambuco.*  
S.S. "SILVERTOWN."

Hour.	At Pernambuco.
SUNDAY, MAY 29 <sup>TH</sup> , 1892— <i>contd.</i>	
A.M.	
10.5	Moored ship with both anchors in Pernambuco Roadstead, in $6\frac{3}{4}$ fms. of water. Draught { Forward 28' 0". of ship { Aft 27' 8".
11.32	Messrs. M. H. Gray, Capt. Thomson, and J. F. Lumsden, accompanied by Mr. Jones, of Messrs. Wilson, Sons, & Co., left for shore.
NOON.	Moderate ESE wind. Squally, with rain at times. Moderate swell. Bar. 30.160 (82° F.). Temp. 81°·7 F. dry, 76°·5 F. wet. Sea surface 81° F. Temp. in cable tanks : fore tank 75° F., main tank 72 $\frac{1}{2}$ ° F., after tank 73° F. During this morning all the cable for the Pernambuco—Fernando Noronha Section (I.R. core) tested by Mr. Bent; results satisfactory.
P.M.	
5.0	During this afternoon pumped water out of fore cable tank and after ballast tank.
6.0	Temp. in cable tanks : fore tank 75° F., main tank 72° F., after tank 73° F.
MONDAY, MAY 30 <sup>TH</sup> , 1892.	
A.M.	
8.0	Temp. in cable tanks : fore tank 74 $\frac{1}{2}$ ° F., main tank 72° F., after tank 72 $\frac{1}{2}$ ° F.
NOON.	Moderate SE by E wind. Cloudy and squally, with passing showers of rain. Bar. 30.170 (81° F.). Temp. 80·8° F. dry, 76°·1 F. wet. Sea surface 81° F. Temp. in cable tanks : fore tank 76° F., main tank 73° F., after tank 73° F.
P.M.	
2.33	Mr. G. H. Bailey left for shore.
4.0	During to-day all cable in main and after tanks tested by Mr. Bent; results satisfactory.
6.0	Temp. in cable tanks : fore tank 76° F., main tank 73° F., after tank 73° F.
6 20	Messrs. J. Gibson Keiller, of Messrs. Wilson, Sons, & Co., and B. H. Tuckness visited ship.

SOUNDING OFF PERNAMBUCO.

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AT PERNAMBUCO.

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S.S. "SILVERTOWN."

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MAY 31ST TO JUNE 3RD, 1892.

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# SOUNDING OFF PERNAMBUCO.

S.S. "SILVERTOWN."

Hour.	TUESDAY, MAY 31st, 1892.
A.M. 6.45	Weighed anchors and set on to the Northward to take soundings. Olinda Lighthouse bearing N 73° W. Temp. in cable tanks : fore tank 75° F., main tank 72° F., after tank 73° F.
NOON.	Strong E'ly wind. Dull and overcast, with passing heavy squalls of wind and rain. Moderate sea and long swell. Ship rolling heavily and shipping water at times. Bar. 30.035 (81° F.). Temp. 80°·8 F. dry, 78°·2 F. wet. Sea surface 80°·5 F. Position { Lat. 7° 33'·9 S. by D.R. { Long. 34° 34'·9 W. No observations obtainable. Sun obscured. Temp. in cable tanks : fore tank 74½° F., main tank 72½° F., after tank 73° F.
P.M. 1.0	Ceased transferring coal from fore hold to bunkers on account of ship rolling so much, and shipping much water forward. About 17 tons of coal transferred this morning.
2.53	Sounding { Lat. 7° 16'·5 S 34 S { Long. 34° 24'·9 W } 887 fms. oz.
3.41	Sounding { Lat. 7° 16'·1 S 35 S { Long. 34° 28'·2 W } 213 fms. s. and br. sh.
5.19	Sounding { Lat. 7° 15'·4 S 36 S { Long. 34° 23'·3 W } 1340 fms. oz.
6.0	Temp. in cable tanks : fore tank 74½° F., main tank 72½° F., after tank 73° F. Cable hands and mechanics unable to do any work about decks to-day on account of the weather.
6.39	Sounding { Lat. 7° 15'·0 S 37 S { Long. 34° 20'·8 W } 1523 fms. gl. oz.

*Sounding off Pernambuco.*

S.S. "SILVERTOWN."

TUESDAY, MAY 31st, 1892— <i>contd.</i>	
Hour. P.M.	
8.0	Moderate E'ly wind. Overcast, dull and sultry. Heavy ESE sea. Ship rolling. Bar. 30.135 (81° F.). Temp. 80°·8 F. dry, 76°·5 wet. Sea surface 80°·8 F.
8.26	T. Sounding { Lat. 7° 14'·6 S } 1800 fms. { Bottom temp. 38 S { Long. 34° 18'·4 W } stf. m. { 44°·0 F. Surface temp. 80°·8 F.
11.45	Sounding { Lat. 7° 13'·1 S } 2200 fms. oz. 39 S { Long. 34° 14'·2 W }
MIDNT.	Fresh ESE wind. Overcast and squally, with rain. Heavy sea. Ship rolling heavily at times; sea breaking over the stern when sounding.
WEDNESDAY, JUNE 1st, 1892.	
A.M.	
3.3	Sounding { Lat. 7° 11'·6 S } 1900 fms. stf. m. 40 S { Long. 34° 4'·7 W }
6.36	Sounding { Lat. 6° 58'·0 S } 1454 fms. n. sn. 41 S { Long. 33° 55'·3 W }
8.0	Fresh ESE wind. Overcast and squally. Heavy sea from ESE. Ship rolling heavily. Bar. 30.110 (81° F.) Temp. 80°·3 F. dry, 76°·9 F. wet. Sea surface 81°·8 F. Temp. in cable tanks: fore tank 75° F., main tank 73° F., after tank 73° F.
10.7	Sounding { Lat. 6° 59'·4 S } 1515 fms. f. s. 42 S { Long. 33° 48'·8 W }
10.25	Set on for Pernambuco again.
NOON.	Moderate ESE wind. Fine, but very cloudy. Heavy ESE sea. Bar. 30.154 (84° F.). Temp. 83° F. dry, 78°·2 F. wet. Sea surface 81°·8 F. Position by { Lat. 7° 3'·8 S. observations { Long. 33° 57'·8 W. Current observed since leaving Pernambuco at 6.45 a.m. yesterday = N 47° W, 17.6 N.M. = 0.6 kt. Temp. in cable tanks: fore tank 76° F., main tank 73° F., after tank 73½° F.



*Sounding off Pernambuco.*

S.S. "SILVERTOWN."

Hour.	WEDNESDAY, JUNE 1st, 1892— <i>contd.</i>
P.M. 5.30	Ceased transferring coal from fore hold to bunkers; 38 tons shifted to-day.
6.0	Temp. in cable tanks: fore tank 76° F., main tank 73° F. after tank 73½° F.
8.0	Light SE wind. Fine and clear. Moderate ESE sea Weather moderated considerably this afternoon. Bar. 30·140 (79° F.). Temp. 79°·3 F. dry, 75°·6 F. wet. Sea surface 79°·8 F.
8.50	Olinda Light abeam. Current observed since noon = N 53° W, 7·9 N.M. = 0·9 KT.
10.0	Let go anchor in 8½ fms. off Pernambuco. Burned arc light as a signal to Mr. M. H. Gray of ship's return.

THURSDAY, JUNE 2ND, 1892.

A.M.	
8.0	Light SW breeze. Fine, but cloudy. Moderate ESE swell rolling into anchorage. Bar. 30·135 (76° F.). Temp. 77°·5 F. dry, 73°·3 F. wet. Sea surface 79°·8 F. Temp. in cable tanks: fore tank 76° F., main tank 73½° F., after tank 73½° F.
8.30	Mr. Jones, of Messrs. Wilson, Sons, & Co., came on board with a letter from Mr. M. H. Gray to Mr. H. Benest.
9.10	Mr. F. W. Knight left the ship for duty on shore.
9.45	Weighed anchor and set on for position in lat. 8° 22' S., long. 34° 38'·5 W, to sound for the edge of bank.
11.0	Cable hands and crew resumed transferring coal from fore hold to bunkers.
NOON.	Moderate SE by E breeze. Fine, but cloudy. Moderate decreasing swell. Bar. 30·138 (80° F.). Temp. 81° F dry, 76°·5 F. wet. Sea surface 80° F.

*Sounding off Pernambuco.*

S.S. "SILVERTOWN."

HOUR. P.M.	THURSDAY, JUNE 2ND, 1892— <i>contd.</i>
	Position by { Lat. 8° 5'·1 S. observations { Long. 34° 38'·0 W. Temp. in cable tanks: fore tank 76° F., main tank 74° F., after tank 74° F.
2.27	Sounding { Lat. 8° 22'·6 S } 29 fms. s. and brk. sh. 43 S { Long. 34° 37'·8 W } Cape Agostinho Lighthouse bearing N 83° W, 18 N.M. distant.
2.55	Sounding { Lat. 8° 22'·4 S } 202 fms. grl. 44 S { Long. 34° 36'·1 W }
3.29	Sounding { Lat. 8° 22'·0 S } 332 fms. s. and m. 45 S { Long. 34° 34'·3 W }
4.3	Sounding { Lat. 8° 21'·6 S } 416 fms. s. and sh. 46 S { Long. 34° 32'·5 W }
4.37	Sounding { Lat. 8° 21'·2 S } 464 fms. m. and s. 47 S { Long. 34° 30'·8 W }
5.0	Ceased shifting coals for to-day. 61 tons transferred to bunkers to-day.
5.30	Sounding { Lat. 8° 20'·8 S } 676 fms. m. 48 S { Long. 34° 27'·2 W }
6.0	Temp. in cable tanks: fore tank 76° F., main tank 74° F., after tank 74° F.
6.25	Sounding { Lat. 8° 20'·1 S } 606 fms. stf. m. 49 S { Long. 34° 24'·1 W }
7.31	Sounding { Lat. 8° 19'·6 S } 650 fms. grt. m. 50 S { Long. 34° 21'·1 W }
8.0	Light SE wind. Cloudy and squally, with rain at times. Moderate ESE sea and swell. Bar. 30·110 (79° F.). Temp. 78°·5 F. dry, 76°·3 F. wet. Sea surface 79°·5 F.
8.27	Sounding { Lat. 8° 18'·8 S } 652 fms. stf. m. 51 S { Long. 34° 18'·2 W }
9.22	Sounding { Lat. 8° 18'·2 S } 686 fms. cl. and m. 52 S { Long. 34° 15'·0 W }
10.37	Sounding { Lat. 8° 17'·5 S } 704 fms. grt. m. 53 S { Long. 34° 9'·1 W }

*Sounding off Pernambuco.*

S.S. "SILVERTOWN."

Hour.

THURSDAY, JUNE 2ND, 1892—*contd.*

P.M.

11.53

Sounding { Lat.  $8^{\circ} 16' 8''$  S  
54 S { Long.  $34^{\circ} 3' 2''$  W } 623 fms. cl. and m.

MIDNT.

Moderate SE wind. Fine, but overcast and misty  
Moderate swell.  
Set on for Pernambuco.

FRIDAY, JUNE 3RD, 1892.

A.M.

3.36

Observed Cape Agostinho Light bearing  $S 64^{\circ} W$ .

4.20

Fix by land. Current observed since 2.20 p.m. yesterday  
= N,  $13\cdot3$  N.M. =  $0\cdot95$  KT.

6.30

Moored ship with both anchors in 7 fms. of water in  
Pernambuco Roadstead.

Draught { Forward  $27' 6''$ .  
of ship { Aft  $27' 0''$ .

8.0

Moderate E by N wind. Fine and clear. Moderate ESE  
swell rolling into anchorage.

Bar.  $30\cdot145$  ( $80^{\circ}$  F.). Temp.  $80^{\circ}\cdot3$  F. dry,  $76^{\circ}\cdot5$  F. wet.  
Sea surface  $80^{\circ}$  F.

Temp. in cable tanks: fore tank  $76^{\circ}$  F., main tank  $74^{\circ}$  F.,  
after tank  $74^{\circ}$  F.

8.30

Cable hands and crew resumed transferring coal from fore  
hold to bunkers.

NOON.

Light ESE breeze. Fine and clear.

Bar.  $30\cdot150$  ( $82^{\circ}$  F.). Temp.  $83^{\circ}\cdot3$  F. dry,  $78^{\circ}\cdot4$  F. wet. Sea  
surface  $80^{\circ}\cdot6$  F.

Temp. in cable tanks: fore tank  $78^{\circ}$  F., main tank  $75^{\circ}$  F.,  
after tank  $75^{\circ}$  F.

P.M.

1.0

All cable in tanks (except the spliced pieces of I.R. core  
in after tank) tested this morning; results satisfactory.

5.7

Mr. M. H. Gray returned to ship, bringing ship's mail,  
accompanied by Mr. R. E. Peake, of Messrs. Clark, Forde,  
and Taylor's staff, who arrived yesterday in the mail steamer  
from Rio Janeiro.

6.0

Temp. in cable tanks: fore tank  $77^{\circ}$  F., main tank  $75^{\circ}$  F.,  
after tank  $75^{\circ}$  F.



SOUNDING BETWEEN PERNAMBUCO  
AND BAHIA.

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S.S. "SILVERTOWN."

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JUNE 3RD TO JUNE 6TH, 1892.

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# SOUNDING BETWEEN PERNAMBUCO AND BAHIA.

S.S. "SILVERTOWN."

Hour.	FRIDAY, JUNE 3RD, 1892— <i>contd.</i>	
P.M.		
6.20	Weighed anchors and set on for position to take soundings to seaward of No. 54 sounding taken last night, to determine the extent of the bank, <i>en route</i> to Bahia for coal.	
8.0	Moderate SE by S wind. Fine, but cloudy. Moderate SE sea. Bar. 30.130 (80° F.). Temp. 80° F. dry, 76°·8 F. wet. Sea surface 80°·2 F.	
SATURDAY, JUNE 4TH, 1892.		
A.M.		
4.7	Sounding { Lat. 8° 24'·7 S 55 S { Long. 33° 52'·6 W } 1695 fms. gl. oz.	
6.35	Sounding { Lat. 8° 25'·6 S 56 S { Long. 33° 42'·1 W } 2141 fms. gl. oz.	
7.5	Set on for Bahia.	
8.0	Moderate SE by E wind. Fine and clear. Moderate SE sea. Bar. 30.175 (83° F.). Temp. 80°·5 F. dry, 76°·6 F. wet. Sea surface 81° F. Temp. in cable tanks : fore tank 77° F., main tank 74½° F., after tank 75° F.	
NOON.	Moderate SE wind. Fine and clear. Moderate sea. Bar. 30.165 (82° F.). Temp. 83°·3 F. dry, 78°·0 F. wet. Sea surface 80°·1 F. Position by { Lat. 9° 1'·5 S. observations { Long. 34° 7'·9 W. Current observed since leaving Pernambuco last evening = S 30° E, 7.0 N.M. = 0.4 kt. Temp. in cable tanks : fore tank 77° F., main tank 75° F., after tank 75½° F.	

*Sounding between Pernambuco and Bahia.*

S.S. "SILVERTOWN."

Hour.	SATURDAY, JUNE 4TH, 1892— <i>contd.</i>
P.M. 6.0	Temp. in cable tanks : fore tank 77° F., main tank 75° F., after tank 75½° F.
8.0	Moderate E'ly wind. Fine and clear. Moderate sea from ESE. Bar. 30·130 (79° F.). Temp. 79°·5 F. dry, 76°·3 F. wet. Sea surface 79°·8 F.
SUNDAY, JUNE 5TH, 1892.	
A.M. 6.0	Position { Lat. 10° 46'·8 S. by stars { Long. 35° 59'·5 W. Current observed since noon yesterday = N 19° E, 14·3 N.M. = 0·8 KT.
8.0	Moderate ESE breeze. Fine and clear. Moderate ESE sea. Bar. 30·175 (81° F.). Temp. 78°·8 F. dry, 75°·5 F. wet. Sea surface 78°·8 F. Temp. in cable tanks : fore tank 77° F., main tank 75° F., after tank 75° F.
11.0	Mustered ship's company. Ship inspected by Mr. M. H. Gray, Capt. Thomson, and Dr. Cruttwell.
NOON.	Light SE by E breeze. Fine and clear. Bar. 30·195 (79° F.). Temp. 81°·3 F. dry, 76°·3 F. wet. Sea surface 79° F. Position by { Lat. 11° 22'·6 S. observations { Long. 36° 38'·5 W. Distance run since noon yesterday = 204 N.M. Temp. in cable tanks : fore tank 77° F., main tank 75° F., after tank 75½° F.
P.M. 4.30	Stopped ship in lat. 11° 50'·4 S, long. 37° 2'·3 W, to take the following serial temperatures (with an ordinary maximum and minimum thermometer):— Temp. at surface = Max. 77°·1 F., Min. 76°·2 F. " 5 fms. below surface = " 79°·8 F., " 75°·7 F. " 10 " " = " 79°·7 F., " 75°·7 F. " 15 " " = " 79°·6 F., " 75°·6 F. " 20 " " = " 79°·6 F., " 75°·5 F. " 25 " " = " 79°·6 F., " 75°·3 F
5.30	Set on for Bahia



*Sounding between Pernambuco and Bahia.*

S.S. "SILVERTOWN."

Hour.	SUNDAY, JUNE 5TH, 1892— <i>contd.</i>
P.M. 6.0	Temp. in cable tanks: fore tank 77° F., main tank 75° F., after tank 75½° F.
8.0	Light SE breeze. Fine and clear. Bar. 30·170 (78° F.). Temp. 78°·5 F. dry, 73°·3 F. wet. Sea surface 78°·5 F.
	MONDAY, JUNE 6TH, 1892.
A.M. 5.45	Commenced to run water into fore tank, and filled other tanks to surface.
6.58	Itapuan Lighthouse abeam, bearing N 40° W, 4 N.M. distant. Current observed since noon yesterday = N 32° E, 20·4 N.M. = 1·1 kt.
7.20	Stopped ship to take the following sounding and serial temperatures:— T. Sounding { Lat. 13° 3'·0 S 57 S { Long. 38° 20'·1 W } 154 fms. m. Temp. at surface = Max. 77°·2 F., Min. 77°·2 F. ,, 5 fms. below surface = ,, 78°·9 F., ,, 76°·2 F. ,, 10 ,, ,, = ,, 79°·5 F., ,, 76°·2 F. ,, 20 ,, ,, = ,, 79°·4 F., ,, 77°·0 F. ,, 30 ,, ,, = ,, 80°·3 F., ,, 76°·7 F.
7.30	Finished running water into cable tanks; cable well covered with water.
8.0	Light SE breeze. Fine, but cloudy. Bar. 30·195 (79° F.). Temp. 77°·5 F. dry, 74° F. wet. Sea surface 77°·6 F. Temp. in cable tanks: fore tank 75½° F., main tank 75½° F., after tank 76° F.
8.5	Set on for Bahia.
9.30	Rounded St. Antonio Lighthouse.



AT BAHIA.

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S.S. "SILVERTOWN."

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JUNE 6TH TO JUNE 18TH, 1892.

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# AT BAHIA

## S.S. "SILVERTOWN."

Hour.	
A.M.	MONDAY, JUNE 6TH, 1892— <i>contd.</i>
10.10	Let go anchor in $6\frac{3}{4}$ fms. of water off the town of Bahia. Draught of ship $\left\{ \begin{array}{l} \text{Forward } 27' 6'' \\ \text{Aft } 27' 2'' \end{array} \right.$
10.15	Doctor of port came alongside and gave pratique.
10.25	Mr. Americo de Freitas (ship chandler) came on board.
10.30	Mr. J. M. Florence, of Messrs. Wilson, Sons, & Co., came on board.
11.42	Weighed anchor and set on for anchorage off coal wharf. More favourable for coaling.
NOON.	Light variable breeze. Fine and clear. Very close and sultry. Bar. 30·185 (79° F.). Temp. 78°·3 F. dry, 74°·5 F. wet. Sea surface 78°·6 F. Temp. in cable tanks: fore tank 76° F., main tank 76° F., after tank $76\frac{1}{2}$ ° F.
P.M.	
0.35	Let go anchor again in 8 fms. of water.
0.45	Lighters with coal came alongside.
1.15	Commenced shipping coal in bunkers. During this afternoon tests were taken on the cable in main and after tanks by Mr. R. E. Peake, in the presence of Mr. E. March Webb; results satisfactory.
6.40	Stopped coaling ship for the night; about 160 tons shipped in bunkers to-day.

S.S. "SILVERTOWN."

HOUR.

TUESDAY, JUNE 7TH, 1892.

A.M.

8.55

Resumed shipping coal in bunkers.

NOON.

Light ESE breeze. Fine and clear.

Bar. 30.200 (79° F.). Temp. 80° F. dry, 74°·8 F. wet. Sea surface 79° F.

Temp. in cable tanks: fore tank 77° F., main tank 76° F., after tank 76½° F.

A number of the staff ashore on leave this afternoon.

P.M.

3.40

Messrs. Robertson and Barker, of the Western and Brazilian Telegraph Company, visited ship.

During to-day the remaining sections of cable on board tested by Mr. R. E. Peake in the presence of Mr. E. March Webb; results satisfactory.

5.45

Ceased coaling for the day; about 100 tons shipped in bunkers to-day.

6.0

Temp. in cable tanks: fore tank 77° F., main tank 76° F., after tank 76° F.

WEDNESDAY, JUNE 8TH, 1892.

A.M.

9.15

Resumed shipping coal in bunkers.

NOON.

Fresh ESE wind. Overcast, with heavy rain at times.

Bar. 30.230 (76° F.). Temp. 76°·8 F. dry, 73° F. wet. Sea surface 78°·1 F.

Temp. in cable tanks: fore tank 77° F., main tank 76° F., after tank 76½° F.

P.M.

5.10

Ceased shipping coal for the day; about 100 tons shipped in bunkers to-day.

6.0

Temp. in cable tanks: fore tank 77° F., main tank 76° F., after tank 76½° F.

6.30

Mr. M. H. Gray with a number of visitors came on board.

THURSDAY, JUNE 9TH, 1892.

A.M.

8.55

Commenced shipping coal in fore hold.

*At Bahia.*

S.S. "SILVERTOWN."

HOUR.	THURSDAY, JUNE 9TH, 1892— <i>contd.</i>
NOON.	<p>Light ESE breeze. Fine, but overcast.            Bar. 30·250 (79° F.). Temp. 80°·5 F. dry, 75°·6 F. wet.            Sea surface 78°·8 F.            Temp. in cable tanks: fore tank 77½° F., main tank 76° F.,            after tank 76½° F.</p>
P.M.	
1.0	<p>Finished shipping coal.            Total amount of coal shipped since arrival here on Monday            last=600 tons, viz., 518 tons in bunkers and 82 tons in fore            hold, purposely taken in slowly.            Total amount of coal now on board=774 tons (632 tons            in bunkers and 142 tons in fore hold).</p>
2.7	<p>Capt. Thomson and Mr. H. P. Daley left for shore, taking            ship's mail.</p>
3.30	<p>During the day shipped 40 tons of fresh water in main            boilers.</p>
6.0	<p>Temp. in cable tanks: fore tank 77° F., main tank 76° F.,            after tank 76½° F.</p>
<p>FRIDAY, JUNE 10TH, 1892.</p>	
A.M.	
8.55	<p>Resumed shipping fresh water in main boilers.</p>
11.52	<p>Messrs. Florence and Wicks visited ship.</p>
NOON.	<p>Fresh ESE wind and squally. Cloudy, with heavy showers            of rain at times.            Bar. 30·230 (79° F.). Temp. 79°·4 F. dry, 73°·8 F. wet.            Sea surface 78°·4 F.            Temp. in cable tanks: fore tank 77° F., main tank 76° F.,            after tank 76½° F.</p>
P.M.	
5.5	<p>Finished shipping fresh water in main boilers, which are            now full=80 tons of water.</p>
6.0	<p>Temp. in cable tanks: fore tank 77° F., main tank 76° F.,            after tank 76½° F.            Draught { Forward 27' 3".                      of ship { Aft 29' 9".</p>

S.S. "SILVERTOWN."

Hour.	SATURDAY, JUNE 11TH, 1892.
NOON.	Light ESE breeze. Fine, but cloudy and misty. Bar. 30.250 (78° F.). Temp. 80°.4 F. dry, 75°.1 wet. Sea surface 78°.8F. Temp. in cable tanks: fore tank 77° F., main tank 75½° F., after tank 76° F.
P.M.	
0.15	Telegraph Construction and Maintenance Company's steamer "Scotia" arrived from the S'd.
1.40	Mr. T. W. Bacon, accompanied by Mr. H. Harrison (Navigating Officer), of the S.S. "Scotia," came on board
3.37	Mr. M. H. Gray, accompanied by Messrs. Wilcox, Parker, and Davies, of the Western and Brazilian Telegraph Company, came on board.
5.40	Capt. Cato and Messrs. Petley and Colley, of the "Scotia," visited ship.
6.0	Temp. in cable tanks: fore tank 77° F., main tank 75½° F., after tank 76° F.
8.15	Mr. Riddle, of the "Scotia," visited ship.
10.30	Capt. Thomson and Mr. B. C. Combe left for shore to take sights.
MIDNT.	Light ESE wind. Fine, but overcast.

SUNDAY, JUNE 12TH, 1892.

A.M.	
0.5	Capt. Thomson and Mr. B. C. Combe returned to ship.
11.0	General muster of all hands and call to boat stations.
11.30	Mr. M. H. Gray left for shore to post letters to Cannon Street and to Mr. Parsoné at Rio Janeiro.
NOON	Light ESE breeze. Fine, but cloudy and hazy. Bar. 30.225 (79° F.). Temp. 81°.7 F. dry, 76°.0 F. wet. Sea surface 72°.4 F. Temp. in cable tanks: fore tank 77° F., main tank 76° F., after tank 76½° F.
P.M.	
2.0	H.M.S. "Cleopatra" arrived from the S'd.
6.0	Temp. in cable tanks: fore tank 77° F., main tank 76° F., after tank 76° F.
7.30	Mr. Tomkins and Dr. Dickenson, of the "Scotia," came on board.



*At Bahia.*

S.S. "SILVERTOWN."

HOOR.	MONDAY, JUNE 13TH, 1892 (46th day out).
NOON.	Fresh ESE wind. Overcast and squally, with heavy rain at times. Bar. 30·200 (75° F.). Temp. 77°·3 F. dry, 75° F. wet. Sea surface 78°·1 F. Temp. in cable tanks: fore tank 77° F., main tank 76° F., after tank 76½° F.
P.M. 6.0	Temp. in cable tanks: fore tank 77° F., main tank 76° F., after tank 76° F.

TUESDAY, JUNE 14TH, 1892.

A.M. 7.30	Pumped water out of fore cable tank. Temp. in cable tanks: fore tank 76½° F., main tank 75½° F., after tank 76° F.
NOON.	Moderate S'yly wind. Overcast and squally, with rain. Bar. 30·240 (75° F.). Temp. 76°·7 F. dry, 75°·1 wet. Sea surface 77°·5 F. Temp. in cable tanks: fore tank 77° F., main tank 76° F., after tank 76° F. Tests taken on all cable this morning; results satisfactory.
P.M. 1.25	Telegram brought on board for Mr. M. H. Gray from Mr. A. P. Crouch, at St. Louis, who reports that the tests on the length of cable laid out from St. Louis Hut for the Senegal—Fernando de Noronha Section are highly satisfactory.
3.15	Mr. M. H. Gray, accompanied by Mr. H. C. Forde and jointer Molt, left for shore. Molt accompanied Mr. Gray to assist in the examination of a quantity of rubber offered for sale. This was found to be of an inferior quality and not up to sample.
3.20	Mr. Riddle, of the "Scotia," came on board, accompanied by Mr. Stephenson, chief electrician of the "Scotia."
6.0	Temp. in cable tanks: fore tank 77° F., main tank 76° F., after tank 76° F. During this evening ran a length of suction hose from both main and after cable tanks to the outside of ship, one end of the hose being about two feet below the hatches over tanks and the other end (running across main deck) about one foot above the sea water. The hatches over the tanks were then covered as closely as possible with tarpaulins. This has been done, as an experiment, to siphon off the sulphuretted hydrogen gas coming from the water in the tanks.

S.S. "SILVERTOWN."

WEDNESDAY, JUNE 15TH, 1892.	
Hour.	
A.M.	
6.0	S.S. "Scotia" weighed anchor and left for the N'd to repair the old cable between here and Pernambuco.
6.30	H.M.S. "Cleopatra" left for the N'd.
NOON.	Light S'y wind. Fine, but cloudy. Bar. 30.250 (77° F.). Temp. 79° F. dry, 77°·3 F. wet. Sea surface 77°·8 F.
P.M.	
6.0	Temp. in fore tank 77° F., main and after tanks covered up.
THURSDAY, JUNE 16TH, 1892.	
A.M.	
9.58	S.S. "Scotia" came into the port and anchored near by.
NOON.	Light S by E wind. Cloudy, with passing showers of rain. Bar. 30.240 (77° F.). Temp. 75°·9 F. dry, 73°·7 wet. Sea surface 78° F. Temp. in cable tanks: fore tank 76½° F., main and after tanks covered up. Tests taken on all cable this morning; results satisfactory.
P.M.	
6.0	Temp. in fore tank, 76° F.
FRIDAY, JUNE 17TH, 1892.	
6.25	S.S. "Scotia" proceeded to sea.
9.25	R.M.S. "Thames" from Rio Janeiro arrived in the port.
9.47	Messrs. M. H. Gray, H. C. Forde, H. B. Forde, and R. E. Peake left for R.M.S. "Thames."
10.35	Steam launch came alongside with Messrs. M. H. Gray, H. C. Forde, H. B. Forde, and R. E. Peake, accompanied by Messrs. J. Rymer-Jones, R. Appleyard, and T. A. H. Forde, who have come up from Rio Janeiro by the "Thames."
NOON.	Moderate SE by E wind. Overcast, with rain at times. Bar. 30.220 (73° F.). Temp. 70°·8 F. dry, 71°·9 F. wet Sea surface 77° F. Temp. in fore tank, 77° F.

*At Bahia.*

S.S. "SILVERTOWN."

Hour.	FRIDAY, JUNE 17TH, 1892— <i>contd.</i>
P.M.	
1.35	Mr. Mayall, of the Western and Brazilian Telegraph Company, came on board.
3.27	R.M.S. "Clyde," from England, anchored close by.
3.30	Messrs. H. C. Forde, T. A. H. Forde, and R. Appleyard took leave of ship and left for the R.M.S. "Thames," in which vessel they proceed to England.
6.0	Temp. in fore tank 77° F.
6.27	Mr. J. M. Florence left for shore, taking with him telegrams for Pernambuco, Rio Janeiro, and London from Mr. M. H. Gray.
8.30	During this evening Mr. M. H. Gray inspected ship's bilges, fore peak, and pockets between cable tanks.
9.10	Mr. M. H. Gray took leave of ship and proceeded on board the "Clyde" for passage to Rio Janeiro.
10.10	R.M.S. "Thames" left for England.
10.15	R.M.S. "Clyde" left for Rio Janeiro.
	SATURDAY, JUNE 18TH, 1892.
A.M.	
8.10	S.S. "Scotia" came into the port and anchored.
9.40	Mr. J. Rymer-Jones left for shore, to remain there while ship is at sea.
11.30	Hoisted up boats and prepared for sea.
NOON.	Light SSW breeze. Fine and clear. Bar. 30.250 (75° F.). Temp. 77°·5 F. dry, 75°·6 F. wet Sea surface 78° F. Temp. in fore tank 77° F. Tests taken on all cable in tanks this morning; results satisfactory.



SOUNDING OFF MACEIO AND CAPE  
AGOSTINHO.

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S.S. "SILVERTOWN."

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JUNE 18TH TO JUNE 28TH, 1892.

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# SOUNDING OFF MACEIO AND CAPE AGOSTINHO.

S.S. "SILVERTOWN."

HOUR. P.M.	Procuring Cold Sea Water off the Coast for Cable Tanks.
SATURDAY, JUNE 18TH, 1892— <i>contd.</i>	
1.16	Weighed anchor and set on seawards.
1.57	St. Antonio Lighthouse abeam. Set course for position in lat. 15° S, long. 38° W, to get cold water for cable tanks.
6.0	Temp. in fore tank 77° F.
6.18	Current observed since leaving Bahia=S 29° W, 8.5 N.M. =2.1 KTS.
SUNDAY, JUNE 19TH, 1892.	
A.M. 6.0	Position { Lat. 14° 26'·7 S. by stars { Long. 38° 9'·7 W. Current observed since 6.18 p.m. yesterday=N 10° W, 17.8 N.M.=1.5 KT.
8.0	Commenced to pump water out of main cable tank.
9.0	Finished pumping out main tank. Commenced to pump water out of after cable tank.
9.35	Stopped ship in lat. 14° 48'·3 S, long. 38° 2'·5 W.
9.40	Took temp. of sea water 20 fms. below surface, with an ordinary maximum and minimum thermometer, and found it =max. 78°·7 F.; min. 75°·3 F. Surface temp. 77°·3 F.
9.50	Set on again to the Southward at reduced speed.
10.15	Finished pumping water out of after cable tank.
10.25	Commenced to run sea water into main and after cable tanks again.

**Procuring Cold Sea Water off the Coast for Cable Tanks—*contd.***

Hour.

SUNDAY, JUNE 19TH, 1892—*contd.*

NOON.

Light ESE wind. Overcast, with passing showers of rain. Bar. 30.250, (76° F.). Temp. 77°·5 F. dry, 76°·3 F. wet. Sea surface 78° F.

Position by { Lat. 14° 58'·9 S.  
observations { Long. 37° 58'·6 W.

Difference or set since 6 a.m.=N 17° E, 1·3 N.M. (No current observed.)

Stopped ship. Temp. in fore cable tank: 77° F.

P.M.

0.8

Took temp. of sea water 20 fms. below surface with an ordinary maximum and minimum thermometer, and found it=max. 81°·8 F.; min. 76°·2 F. Surface temp.=78° F.

0.30

Finished running water into main and after cable tanks. Cable covered with water in each tank.

**Steaming to Position off Maceio for Soundings.**

0.35

Temp. of the water in main tank 78° F., and in after tank 79° F.

On examining the water in main tank it was found to be much discoloured, but had no smell.

0.45

Commenced to pump water out of main cable tank.

1.45

Finished pumping water out of main tank, and commenced to pump water out of after cable tank.

2 45

Finished pumping water out of after cable tank.

2.50

Commenced running sea water into main and after cable tanks again.

4.0

Set on full speed for position in lat. 11° 25' S, long. 31° 50' W, to commence taking a line of soundings in towards Maceio Lighthouse.

4.35

Finished running water into main and after cable tanks; cable in both tanks now well covered with water.

Temp. of water in main tank 78½° F., and in after tank 78° F.

During the afternoon rigged a canvas windshoot over each cable tank (the ventilators reaching well into tanks), and ran a length of suction hose from each tank to the outside



*Sounding off Maceio and Cape Agostinho.*

S.S. "SILVERTOWN."

HOOR.	<b>Steaming to Position off Maceio for Soundings—<i>contd.</i></b>
P.M.	SUNDAY, JUNE 19TH, 1892— <i>contd.</i>
	of ship, in a manner similar to that done during the evening of the 14th inst. The hatches over the tanks were then covered as closely as possible with tarpaulins.
6.0	Stopped ship's engines for repairs in engine room. Temp. in fore tank 77° F., main and after tanks covered up.
6.40	Set on full speed again to the N'd.
MIDNT.	Fresh E'ly wind. Fine and clear. Slight increasing E'ly sea and swell.
	MONDAY, JUNE 20TH, 1892.
NOON.	Fresh E by S breeze. Fine and clear. Bar. 30.225 (78° F.). Temp. 76°·8 F. dry, 74°·3 F. wet Sea surface 79°·5 F. Position by { Lat. 13° 46'·0 S. observations { Long. 36° 3'·0 W. Difference or set since noon yesterday=W, 5.8 N.M.= 0.2 KT. current.
P.M.	
6.8	Position { Lat. 13° 24' S. by stars { Long. 35° 24' W. Current observed since noon=W, 1.4 N.M.=0.2 KT.
MIDNT.	Fresh ESE wind and squally, with passing showers of rain.
	TUESDAY, JUNE 21ST, 1892.
A.M.	
5.50	Position { Lat. 12° 43'·7 S. by stars { Long. 34° 5'·2 W. No current observed since 6.8 p.m. yesterday.
NOON.	Moderate SE wind. Fine and clear. Bar. 30.200 (79° F.). Temp. 77°·5 F. dry, 76°·8 F. wet. Sea surface 79°·2 F. Position by { Lat. 12° 24'·2 S. observations { Long. 33° 23'·5 W. Difference or set since 5.50 a.m.=S 32° E, 2.8 N.M. (No current observed.)

*Sounding off Maceio and Cape Agostinho.*

S.S. "SILVERTOWN."

Hour. Steaming to Position off Maceio for Soundings—*contd.*

TUESDAY JUNE 21st, 1892—*contd.*

The greater portion of the cable in tanks tested this morning with satisfactory results.

During the morning the lower fore and main pockets have been thoroughly cleaned out and disinfected.

MIDNT. Similar weather.

Sounding off Maceio.

WEDNESDAY, JUNE 22ND, 1892.

A.M.  
3.34 Sounding { Lat.  $11^{\circ} 26' \cdot 2$  S } 2836 fms. oz.  
58 S { Long.  $31^{\circ} 50' \cdot 5$  W }

4.0 Moderate SE wind. Overcast, with passing rain squalls.  
Moderate sea from SE.

8.18 T. Sounding { Lat.  $11^{\circ} 15' \cdot 6$  S } 2722 fms. oz.  
59 S { Long.  $32^{\circ} 12' \cdot 7$  W }  
Bottom temp. { By Capsizing Thermometer  
No. 51107 =  $37^{\circ} \cdot 7$  F.  
Surface temp. =  $78^{\circ} \cdot 3$  F.

NOON. Light ESE breeze. Squally, with rain. Moderate ESE sea.

Bar. 30.158 ( $77^{\circ}$  F.). Temp.  $75^{\circ}$  F. dry,  $73^{\circ} \cdot 6$  F. wet. Sea surface  $78^{\circ} \cdot 9$  F.

Position by { Lat.  $11^{\circ} 5' 5$  S.  
observations { Long.  $32^{\circ} 36' \cdot 3$  W.

Difference or set since noon yesterday = N  $31^{\circ}$  W, 1.7 N.M.  
(No current.)

During the morning tests taken on all cable in tanks; results satisfactory.

P.M.  
1.1 T. Sounding { Lat.  $11^{\circ} 5' \cdot 0$  S } 2671 fms. oz.  
60 S { Long.  $32^{\circ} 37' \cdot 4$  W }  
Temp. by Miller-Casella's Deep } Max.  $79^{\circ} \cdot 5$  F., 9.4 mm.  
Sea Thermometer No. 87855 = .. } Min. (Index moved.)  
Temp. by Miller-Casella's Deep } Max.  $79^{\circ} \cdot 8$  F., 10.6 mm.  
Sea Thermometer No. 87859 = .. } Min.  $33^{\circ} \cdot 4$  F., 1.1 mm

*Sounding off Maceio and Cape Agostinho.*

S.S. "SILVERTOWN."

**Sounding off Maceio—*contd.***

Hour.

P.M.

WEDNESDAY, JUNE 22ND, 1892—*contd.*

Temp. by Miller-Casella's Deep } Max. 78°·6 F., 10·08 mm.  
Sea Thermometer No. 87858= .. } Min. 33°·3 F., 0·73 mm.  
Surface temp.=78°·8 F. The deep sea thermometers were lowered horizontally.

To check the above temperatures

3.14 T. Sounding { Lat. 11° 5'·0 S } 2690 fms. oz.  
61 S { Long. 32° 37'·4 W }  
Bottom temp. { By Capsizing Thermometer  
No. 51107=33°·7 F.  
Surface temp.=78°·8 F.

4.0 Moderate ESE wind. Overcast and squally, with rain at times. Moderate sea.

8.44 Sounding { Lat. 10° 54'·9 S } 2821 fms. n. sn.  
62 S { Long. 33° 2'·1 W }

Two attempts were made to take this sounding, in the first case the wire drew at splice when 1600 fms. were paid out. Lost 1577 fms. of "0·034 wire and 1 detaching tube.

MIDNT. Similar weather, with less rain.

THURSDAY, JUNE 23RD, 1892.

A.M.

1.22 Sounding { Lat. 10° 44'·7 S } 2567 fms. n. sn. Lost  
63 S { Long. 33° 24'·6 W } lower portion of tube.

4.0 Moderate SE wind. Fine and clear. Moderate sea.

6.9 Sounding { Lat. 10° 34'·6 S. } 2639 fms. cl.  
64 S { Long. 33° 49'·2 W. }

6.15 Position of ship { Lat. 10° 34'·6 S.  
by stars { Long. 33° 49'·2 W.  
Difference or set since noon yesterday=S 74° W, 2·9 N.M.

8.0 Moderate SE wind. Fine and clear.  
Bar. 30·170 (79° F.). Temp. 81°·3 F. dry, 75° F. wet. Sea surface 80° F.

9.0 Took tarpaulins and hatches off cable tanks and the covers off cones in main and after tanks.

10.30 Sounding { Lat. 10° 25'·5 S } 2506 fms. oz.  
65 S { Long. 34° 13'·6 W }

*Sounding off Maceio and Cape Agostinho.*

S.S. "SILVERTOWN."

HOOR.	Sounding off Maceio— <i>contd.</i>
	THURSDAY, JUNE 23 <sup>RD</sup> , 1892— <i>contd.</i>
NOON.	Moderate ESE breeze. Fine and clear. Bar. 30·165 (81° F.). Temp. 81°·8 F. dry, 75°·3 F. wet. Sea surface 80°·2 F. Position by { Lat. 10° 22'·9 S. observations { Long. 34° 22'·5 W. Difference or set since 6.15 a.m. = S 51° W, 3·6 N.M. = 0·6 kt. current. Temp. in cable tanks: fore tank 79° F., main tank 78° F., after tank 78° F.
P.M. 2.33	Sounding { Lat. 10° 16'·0 S 66 S { Long. 34° 37'·6 W } 2385 fms. gl. oz.
6.0	Temp. in cable tanks: fore tank 79° F., main tank 78° F., after tank 78° F.
6.31	Sounding { Lat. 10° 3'·5 S 67 S { Long. 34° 57'·4 W } 2000 fms. Lost 2017 fms. of "0·034 wire, 1 cutting tube, and Negretti & Zambra's Capsizing Thermometer No. 51107, through the wire drawing at a splice. Current observed since noon = N 63° E, 2·8 N.M. = 0·5 kt.
8.0	Light E by S wind. Fine and clear. Bar. 30·125, (80° F.) Temp. 81° F. dry, 74°·3 F. wet. Sea surface 79° F.
8.6	T. Sounding { Lat. 10° 0'·8 S 68 S { Long. 35° 1'·6 W } 1755 fms. gl. oz. Bottom Temp., Miller- { Max. 80°·1 F. — 8·72 mm. Casella's Deep Sea { Min. 33°·7 F. — 3·29 mm. Therm. No. 87852 { Surface Temp. = 79° F. NOTE.—The thermometer was lowered horizontally to prevent vibration of wire shaking indices down.
9.50	Sounding { Lat. 9° 58'·1 S 69 S { Long. 35° 5'·6 W } 1557 fms. Lost 1500 fms. of wire, and 1 cutting tube. NOTE.—When about 200 fms. of wire were picked up, a sudden strain on the wire brought the engines to a standstill, and wire parted. Very strong current running to the SW.
11.24	Sounding { Lat. 9° 55'·3 S 70 S { Long. 35° 9'·5 W } 1601 fms. gl. oz. Very strong current running to the SW.
MIDNT.	Moderate E by S wind. Overcast and squally, with rain. Moderate ESE sea.

*Sounding off Maceio and Cape Agostinho.*

S.S. "SILVERTOWN."

Hour.

**Sounding off Maceio—contd.**

A.M.

FRIDAY, JUNE 24<sup>TH</sup>, 1892.

- 1.10 T. Sounding { Lat.  $9^{\circ} 52' \cdot 7$  S } 1300 fms. oz.  
 71 S { Long.  $35^{\circ} 13' \cdot 4$  W }  
 Temp. by Miller-Casella's Deep }  
 Sea Thermometer No. 87852 } Max. \_\_\_\_\_  
 (lowered horizontally) = .. } Min.  $35^{\circ} \cdot 8$  F., 3.35 mm  
 Sea surface temp. =  $78^{\circ} \cdot 8$  F.
- 2.46 Sounding { Lat.  $9^{\circ} 50' \cdot 0$  S } 1023 fms. oz.  
 72 S { Long.  $35^{\circ} 17' \cdot 4$  W }  
 Strong current running to the SW all night.
- 4.30 Sounding { Lat.  $9^{\circ} 47' \cdot 4$  S } 26 fms. r.  
 73 S { Long.  $35^{\circ} 21' \cdot 3$  W }  
 Little or no current running now.  
 No position could be fixed by morning observations.  
 Course was set for position of second line of soundings by  
 bearing of land at 6.20 a.m., after having run in about  
 9 miles to W'd.
- 4 50 Changed course to W. Light E by S breeze. Fine and  
 bright, with passing clouds.
- 5.0 Changed course to N  $63^{\circ}$  W.
- 5.50 Stopped ship.
- 5.57 Sounding { Lat.  $9^{\circ} 43' \cdot 6$  S } 21 fms. s. and brk. sh.  
 74 S { Long.  $35^{\circ} 28' \cdot 3$  W }
- 6.20 Bearings of land.—Conspicuous mountain N  $37\frac{1}{2}^{\circ}$  W  
 south extremity of range N  $49^{\circ}$  W.  
 Set on again on N  $63^{\circ}$  E course, to take soundings off Cape  
 Agostinho.
- 8.0 Moderate SSE breeze. Fine and clear.  
 Bar. 30.200 ( $80^{\circ}$  F.). Temp.  $77^{\circ} \cdot 8$  F. dry,  $71^{\circ} \cdot 3$  F. wet. Sea  
 surface  $78^{\circ}$  F.  
 Temp. in cable tanks: fore tank  $77^{\circ}$  F., main tank  $78^{\circ}$  F.,  
 after tank  $78\frac{1}{2}^{\circ}$  F.

*Sounding off Maceio and Cape Agostinho.*

S.S. "SILVERTOWN."

Hour.	Sounding off Maceio— <i>contd.</i>
	FRIDAY, JUNE 24TH, 1892— <i>contd.</i>
NOON.	Moderate SSE breeze. Fine, but overcast. Sun obscured. Moderate ESE sea. Bar. 30.250 (79° F.). Temp. 78°.3 F. dry, 72°.8 F. wet. surface 79°.5 F. Position { Lat. 9° 24'.8 S. by D.R. { Long. 34° 48'.1 W. Temp. in cable tanks: fore tank 79° F., main tank 78° F., after tank 78½° F.
P.M. 1.10	Position by { Lat. 9° 14'.6 S. observations { Long. 34° 36'.0 W. Current observed since 6 p.m. yesterday = N 32° E, 6.7 N.M. = 0.3 KT.

Sounding off Cape Agostinho.

6 0	Temp. in cable tanks: fore tank 78° F., main tank 77½° F., after tank 78° F.
8 0	Light SE by S wind. Overcast, with continual rain all the afternoon. Moderate SE sea. Bar. 30.195 (76° F.). Temp. 75° F. dry, 73° 8 F. wet. Sea surface 79° 5 F.
10.47	Sounding { Lat. 8° 46'.6 S 75 S { Long. 33° 31'.1 W } 2368 fms. gl. oz.
MIDNT	Moderate SSE wind. Overcast, with rain. Moderate sea.

SATURDAY, JUNE 25TH, 1892.

A.M. 2.58	Sounding { Lat. 8° 38'.5 S 76 S { Long. 33° 55'.5 W } 1287 fms. s. and cl.
4.0	Light SSE wind. Overcast, dull weather. Moderate sea.
5.7	Sounding { Lat. 8° 35'.2 S 77 S { Long. 34° 5'.3 W } 1131 fms. m. and s. This was intended to have been a Temperature Sounding, but the indices of Miller-Casella's Deep Sea Thermometer No. 87852 (lowered horizontally) moved.



*Sounding off Maceio and Cape Agostinho.*

S.S. "SILVERTOWN."

Hour.

A M.

**Sounding off Cape Agostinho—*contd.***

SATURDAY, JUNE 25TH, 1892—*contd.*

- 6.35 T. Sounding { Lat.  $8^{\circ} 33' \cdot 7$  S } 1209 fms. m. and brk. sh.  
       78 S { Long.  $34^{\circ} 9' \cdot 3$  W }  
 Bottom Temp., Therm. } Max.  $77^{\circ} \cdot 9$  F.— $8 \cdot 41$  mm.  
 No. 87852 (lowered } Min.  $48^{\circ} \cdot 9$  F.— $5 \cdot 86$  mm.  
       vertically) { Surface Temp.= $78^{\circ} \cdot 5$  F.
- 7.2 Observed position:—Lat.  $8^{\circ} 33' \cdot 6$  S, long.  $34^{\circ} 10' \cdot 8$  W  
 Difference or set since 1.10 p.m. yesterday=S  $77^{\circ}$  W,  
 2.3 N.M. (No current.)
- 7.56 Sounding { Lat.  $8^{\circ} 31' \cdot 8$  S }  
       79 S { Long.  $34^{\circ} 15' \cdot 6$  W } 1110 fms.  
 Lost 860 fms. of  $0'' \cdot 034$  wire and 1 cutting tube.
- 8.0 Moderate SSE wind. Fine, but cloudy.  
 Bar.  $30 \cdot 245$  ( $79^{\circ}$  F.). Temp.  $78^{\circ}$  F. dry,  $74^{\circ} \cdot 3$  F. wet. Sea  
 surface  $79^{\circ}$  F.
- 9.13 Sounding { Lat.  $8^{\circ} 30' \cdot 1$  S } 1046 fms. gl. oz. and  
       80 S { Long.  $34^{\circ} 21' \cdot 7$  W } brk. sh.
- 10.20 Sounding { Lat.  $8^{\circ} 28' \cdot 7$  S } 880 fms. gl. oz.  
       81 S { Long.  $34^{\circ} 27' \cdot 4$  W }
- 10.55 T. Sounding { Lat.  $8^{\circ} 28' \cdot 7$  S } 824 fms. gl. oz.  
       82 S { Long.  $34^{\circ} 27' \cdot 4$  W }  
 Temp. by Thermometer No. 87852 (lowered horizontally)  
 =max. (index moved); min.  $36^{\circ} \cdot 3$  F.,  $3 \cdot 4$  mm.  
 Temp. of sea surface= $79^{\circ} \cdot 5$  F.
- 11.59 Sounding { Lat.  $8^{\circ} 26' \cdot 7$  S } 701 fms. gl. oz.  
       83 S { Long.  $34^{\circ} 33' \cdot 2$  W }
- NOON. Moderate SE by S wind. Fine and clear. Moderate  
 decreasing sea.  
 Bar.  $30 \cdot 275$  ( $79^{\circ}$  F.). Temp.  $78^{\circ} \cdot 8$  F. dry,  $74^{\circ} \cdot 8$  F. wet.  
 Sea surface  $79^{\circ} \cdot 8$  F.  
 Position by { Lat.  $8^{\circ} 26' \cdot 7$  S.  
 observations { Long.  $34^{\circ} 33' \cdot 2$  W.  
 Current observed since 7.2 a.m.=N  $53^{\circ}$  W,  $5 \cdot 2$  N.M.=  
 1.0 KT.  
 Temp. in cable tanks: fore tank  $79^{\circ}$  F., main tank  $78^{\circ}$  F.  
 after tank  $78 \frac{1}{2}^{\circ}$  F.

*Sounding off Maceio and Cape Agostinho.*

S.S. "SILVERTOWN."

Hour.  
P.M.

**Sounding off Cape Agostinho and Steaming to Bahia.**

SATURDAY, JUNE 25TH, 1892—*contd.*

- 0.54 **T.** Sounding { Lat.  $8^{\circ} 24' \cdot 6$  S } 480 fms. m. s. and brk. sh  
84 S { Long.  $34^{\circ} 34' \cdot 9$  W }  
Surface temp.  $79^{\circ} \cdot 8$  F.  
Bottom Temp. Therm. No. } Max.  $80^{\circ} \cdot 5$  F., 8·83 mm.  
87852 (lowered horizontally)= } Min.  $38^{\circ} \cdot 8$  F., 3·9 mm.
- 1.45 **T.** Sounding { Lat.  $8^{\circ} 22' \cdot 5$  S } 316 fms. c. s.  
85 S { Long.  $34^{\circ} 36' \cdot 5$  W }  
Surface temp.  $79^{\circ} \cdot 2$  F.  
Bottom Temp. Therm. No. } Max.  $78^{\circ} \cdot 3$  F., 8·49 mm  
87852 (lowered horizontally)= } Min.  $43^{\circ} \cdot 8$  F., 4·83 mm.
- 2.12 Sighted Cape Agostinho Lighthouse bearing S  $88^{\circ}$  W.
- 2.30 **T.** Sounding { Lat.  $8^{\circ} 20' \cdot 0$  S } 31 fms.  
86 S { Long.  $34^{\circ} 38' \cdot 0$  W }  
Bottom of tube dented by striking hard bottom.  
Bottom Temp. Therm. No. } Max.  $78^{\circ} \cdot 3$  F., 8·51 mm.  
87852 (lowered horizontally)= } Min.  $75^{\circ}$  F., 11·0 mm.  
Temp. of sea surface  $79^{\circ} \cdot 2$  F.  
Cape Agostinho bearing W, 18 N.M. distant.

**Steaming to Bahia.**

- 2.38 Set course for Bahia again.
- 3.43 Cape Agostinho Lighthouse abeam, bearing N  $64^{\circ}$  W,  
15·8 N.M. distant.  
NOTE.—The chart latitude of Cape Agostinho appears to be  
at least 3 N.M. too far North.
- 6.0 Temp. in fore tank  $78\frac{1}{2}^{\circ}$  F.
- 8.0 Fresh SSE breeze. Fine, but overcast. Moderate SE sea.  
Bar. 30·245 ( $77^{\circ}$  F.). Temp.  $78^{\circ}$  F. dry,  $73^{\circ} \cdot 8$  F. wet. Sea  
surface  $78^{\circ} \cdot 2$  F.

SUNDAY, JUNE 26TH, 1892.

A.M.  
2.30

Observed Maceio Light.

- 3.10 Maceio Light abeam, bearing N  $66^{\circ}$  W, 22·8 N.M. distant.  
Current observed since 2.30 p.m. yesterday = N  $50^{\circ}$  E,  
7·8 N.M. = 0·6 KT.



*Sounding off Maceio and Cape Agostinho.*

S.S. "SILVERTOWN."

**Steaming to Bahia—contd.**

SUNDAY, JUNE 26<sup>TH</sup>, 1892—contd.

HOUR.	
A.M.	
8.0	Moderate S by E breeze. Fine and clear. Bar. 30.250 (81° F.). Temp. 77°·3 F. dry, 72°·5 F. wet. Sea surface 78°·5 F. Temp. in fore tank 78° F.
11.0	General muster of all hands and call to boat stations. Ship inspected by Capt. Thomson, Mr. H. Benest, and Dr. Cruttwell.
NOON.	Light S by E breeze. Fine and clear. Smooth sea, but slight SE swell. Bar. 30.285 (78° F.). Temp. 79°·5 F. dry, 74°·5 F. wet. Sea surface 79°·5 F. Position by { Lat. 10° 42'·9 S. observations { Long. 36° 8'·4 W. Current observed since 3.10 a.m.=N 54° W, 7·3 N.M.=0·8 KT. Temp. in fore tank 78½° F.
P.M.	
6.0	Temp. in fore tank 78° F.
8.0	Moderate SSE breeze. Fine and clear. Bar. 30.250 (78° F.). Temp. 79°·5 F. dry, 75°·4 F. wet. Sea surface 78°·6 F.

MONDAY, JUNE 27<sup>TH</sup>, 1892.

A.M.	
4.0	Moderate increasing SSE wind. Cloudy and squally, with rain.
8.0	Strong S by W wind. Overcast and squally. Moderate increasing sea. Bar. 30.290 (78° F.). Temp. 75°·5 F. dry, 72°·0 F. wet. Sea surface 77°·8 F. Temp. in fore tank 78° F.
8.10	Commenced to run water into fore cable tank.
9.25	Finished running water into fore tank; cable in tank well covered with water. Commenced to run water into main and after tanks, sufficient to cover cable.
10.0	As wind and sea are increasing, pumped a quantity of the water out of cable tanks so that the top flakes of cable will not be disturbed by the water as ship rolls.

*Sounding off Maceio and Cape Agostinho.*

S.S. "SILVERTOWN."

Hour.	Steaming to Bahia—contd.
MONDAY, JUNE 27 <sup>TH</sup> , 1892—contd.	
A.M.	
11.15	Avila Tower abeam, bearing N 60° W, about 10 N.M. distant.
NOON.	Current observed since noon yesterday = N 51° E, 23.9 N.M. = 1 KT. Strong S by W wind. Overcast. Frequent hard squalls, with much rain. Heavy sea running. Ship rolling heavily, and shipping seas. Bar. 30.250 (75° F.). Temp. 73°·5 F. dry, 72°·5 F. wet. Sea surface 77°·0 F. Position by { Lat. 12° 42'·5 S. D.R. { Long. 37° 54'·3 W. Temp. in fore tank 78° F. Weather too rough for cable hands and mechanics to do any work.
P.M.	
4.0	Similar weather. Ship rolling heavily at times and shipping a good deal of water.
7.40	Bearings—S. Antonio Light N 87° W, and Itapuan Light N 25° W. Difference or set since 11.15 a.m. = N 41° W, 11.6 N.M.
8.0	Similar weather. Bar. 30.264 (75° F.). Temp. 73°·8 F. dry, 71°·5 F. wet. Sea surface 75° F. Temp. in cable tanks (all hatches battened down).
9.30	Decided to steam up to wind and sea all night instead of making for anchorage in Bahia. Reduced ship's engines to about forty revolutions per minute.
MIDNT.	Strong S by W wind. Overcast and squally, with much rain. Heavy sea.
TUESDAY, JUNE 28 <sup>TH</sup> , 1892.	
A.M.	
2.45	Turned ship and steered for Bahia.
3.12	Morro S. Paulo Light bearing S 74° W.
4.0	Strong SSW wind. Overcast. Frequent hard squalls, with rain. Heavy sea.
5.0	Ran sufficient water into each of cable tanks to bring water evel with the top flakes of cable.
7.9	Let go anchor in 10 fms. of water in coaling anchorage off Bahia town; veered chain to 60 fms.

AT BAHIA.

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S.S. "SILVERTOWN.'

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JUNE 28TH TO JULY 15TH, 1892.

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# AT BAHIA.

## S.S. "SILVERTOWN."

Hour.	TUESDAY, JUNE 28 <sup>TH</sup> , 1892— <i>contd.</i>
A.M. 8.0	Moderate SSW wind. Overcast and squally, with rain at times. Moderate swell in anchorage. Bar. 30·335 (74° F.). Temp. 69°·9 F. dry, 69°·5 F. wet. Sea surface 76°·5 F. Draught of ship on { Forward 27' 6". arrival this morning { Aft 28' 0".
NOON.	Fresh SSW wind. Overcast and squally, with passing showers of rain. Moderate swell. Bar. 30·340 (75° F.). Temp. 70°·3 F. dry, 68°·3 F. wet. Sea surface 76°·3 F. During the morning tests were taken on cable: piece "1" in after tank and piece "2" in main tank; results satisfactory.
P.M. 4.50	Mr. H. Benest left for the mail steamer "Potosi" to post letter for Mr. M. H. Gray at Rio de Janeiro.

## WEDNESDAY, JUNE 29<sup>TH</sup>, 1892.

NOON.	Moderate SSW wind. Overcast, with rain. Weather moderating generally. Bar. 30·385 (73° F.). Temp. 72°·5 F. dry, 70°·6 F. wet. Sea surface 75°·8 F. Unable to take the temp. in cable tanks owing to the hatches being covered up.
P.M. 0.5	Mr. J. Rymer-Jones came on board.
MIDNT.	Moderate SE wind. Overcast and squally, with heavy rain at times.

S.S. "SILVERTOWN."

THURSDAY, JUNE 30TH, 1892.	
Hour. A.M. 9.0	Weighed anchor and set on seawards, to obtain clean sea-water for filling cable tanks.
10.7	Stopped about a mile to seaward of San Antonio Lighthouse. Moderate sea running. Commenced to run water in cable tanks. Kept ship out to sea while running water on cables.
10.45	Finished running water into cable tanks. Proceeded back to the port.
11.54	Let go anchor in $8\frac{1}{2}$ fms. in the man-of-war anchorage off Bahia.
NOON.	Similar weather. Bar. 30.345 (74° F.). Temp. 72°·5 F. dry, 71° F. wet. Sea surface 75° F.
P.M. 1.0	Tests taken on cable in fore tank; results satisfactory.
MIDNT.	Fresh SE wind. Overcast and squally, with rain at times.

FRIDAY, JULY 1ST, 1892.	
A.M. 7.40	Mr. H. P. Daley left for shore with ship's mail.
8.0	Fresh SE by S wind. Overcast and squally, with rain at times. Heavy rain fell during early morning. Moderate swell coming into anchorage. Bar. 30.350 (72° F.). Temp. 71°·5 F. dry, 69°·8 F. wet. Sea surface 74°·6 F.
NOON.	Fresh SE by S wind. Fine, but cloudy. Bar. 30.355 (76° F.). Temp. 76°·3 F. dry, 70° F. wet. Sea surface 75°·7 F.
P.M. 3.0	Temp. in fore tank 78° F. During the day tests taken on all cable in fore tank, and pieces "1" and "2" in main tank; results satisfactory.

SATURDAY, JULY 2ND, 1892.	
NOON.	Light SSE breeze. Fine and clear. Squally, with rain at times. Bar. 30.350 (77° F.). Temp. 76°·5 F. dry, 71°·3 F. wet. Sea surface 75°·5 F.
P.M. 9.15	Tests taken on cable in fore tank; results satisfactory. Capt. Thomson and Mr. B. C. Combe left for shore to take sights.

S.S. "SILVERTOWN."

SUNDAY, JULY 3RD, 1892.	
HOUR. A.M. 11.0	General muster of all hands and call to boat stations. Ship inspected by Mr. H. Benest, Capt. Thomson, and Dr. Cruttwell.
NOON.	Moderate to fresh SE by E wind. Cloudy, with passing showers of rain. Bar. 30.324 (75° F.). Temp 75°·5 F. dry, 73° F. wet. Sea surface 75°·8 F.
P.M. 4.55	Mr. J. Rymer-Jones, accompanied by Messrs. Robertson and Miranda, of the Western and Brazilian Telegraph Company, came on board. During the day tests taken on the long lengths of cable in main and after tanks by Mr. Bent; results satisfactory.
MONDAY, JULY 4TH, 1892.	
A.M. 9.45	R.M.S.S. "Tagus" arrived from Rio Janeiro.
10.55	Mr. J. Rymer-Jones took leave of ship, and accompanied by Mr. F. W. Robinson, left for the R.M.S.S. "Tagus," in which vessel he proceeds to Pernambuco.
NOON.	Fresh SE by E wind. Overcast and squally, with heavy rain at times. Bar. 30.315 (76° F.). Temp. 76°·8 dry, 73°·2 F. wet. Sea surface 75°·6 F.
TUESDAY, JULY 5TH, 1892.	
A.M. 8.0	Light SE by E wind. Cloudy and squally, with rain at times. Bar. 30.340 (76° F.). Temp. 75° F. dry, 72°·5 F. wet. Sea surface 75°·3 F.
NOON.	Moderate SE by E wind. Fine, but cloudy. Occasional squalls, with rain. Bar. 30.355 (77° F.). Temp. 78°·4 F. dry, 74°·3 F. wet. Sea surface 75°·6 F.
P.M. 2.30	R.M.S.S. "Tagus" left for Pernambuco and Europe. NOTE.—The Western and Brazilian Telegraph Company's old cable between here and Pernambuco, lately repaired by the T.C. and M. Co.'s S.S. "Scotia," is again broken down.
4.25	Mr. W. S. Robertson left ship with some electrical instruments which have been lent to the Western and Brazilian Telegraph Company. During the day tests taken on cable in fore tank by Mr. Bent; results satisfactory.



S.S. "SILVERTOWN."

Hour.	WEDNESDAY, JULY 6TH, 1892.
NOON.	Similar weather. Bar. 30·325 (77° F.). Temp. 78°·7 F. dry, 73°·2 F. wet. Sea surface 75°·3 F.
P.M. 3.30	Mr. Barker, of the Western and Brazilian Telegraph Company, came on board with the borrowed electrical instruments.
4.30	During the day the remaining sections of cable have been tested by Mr. W. Bent; results satisfactory. The official tests are now completed on the whole of the South American Cable Company's cable.
	THURSDAY, JULY 7TH, 1892.
A.M. 1.30	Light SE airs. Cloudy, with very heavy rain.
NOON.	Moderate WSW breeze. Cloudy, with passing showers of rain. Bar. 30·264 (74° F.). Temp. 72°·2 F. dry, 71°·6 F. wet. Sea surface 75° F.
P.M. 3.35	Mr. W. S. Robertson, of the Western and Brazilian Telegraph Company, accompanied by several visitors, came on board.
	FRIDAY, JULY 8TH, 1892.
A.M. 10.0	Opened up hatches over cable tanks to get temperatures of tanks. Found several of the turns of the top flakes of cable in the main tank washed out of place. Pumped water out of main tank till level with third top flake, and after putting the turns of cable in order again, battened down the hatches over each tank. (No smell was perceptible on opening hatches.) Temp. in cable tanks: fore tank 77° F., main tank 77° F., after tank 78° F.
NOON.	Calm. Overcast, with heavy rain all the morning. Bar. 30·260 (74° F.). Temp. 75°·2 F. dry, 73°·8 F. wet. Sea surface 74°·8 F.
P.M. 0.45	Telegram from Mr. M. H. Gray brought on board for Mr. H. Benest.
2.45	Sent a case containing samples of cable ashore to Messrs. Wilson, Sons, & Co., for despatch to Mr. Parsoné, at Rio de Janeiro, by the S.S. "Finance" to-morrow.



## S.S. "SILVERTOWN."

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HOOR. SATURDAY, JULY 9TH, 1892.

NOON. Light E'ly breeze. Fine and clear.  
Bar. 30·300 (77° F.). Temp. 78°·8 F. dry, 73°·1 F. wet. Sea surface 75°·8 F.

P.M.  
8.15 Capt. Thomson, accompanied by Messrs. R. E. Peake and B. C. Combe (Navigating Officer), left for shore to take sights.

SUNDAY, JULY 10TH, 1892.

A.M.  
11.0 General muster and call to boat stations. Ship inspected by Mr. Benest, Capt. Thomson, and Dr. Cruttwell.

NOON. Light SSE breeze. Fine and clear.  
Bar. 30·308 (78° F.). Temp. 80°·6 F. dry, 74°·4 F. wet. Sea surface 76°·2 F.

MONDAY, JULY 11TH, 1892.

NOON. Light S'ly breeze. Fine and clear.  
Bar. 30·296 (77° F.). Temp. 78°·3 F. dry, 73°·3 F. wet. Sea surface 76° F.

Tests taken on all cable in tanks; results satisfactory.

P.M.  
5.10 Telegram from Mr. M. H. Gray brought on board, giving orders to ship sufficient coal to bring the quantity on board equal to the amount in ship on the 9th June.

TUESDAY, JULY 12TH, 1892

A.M.  
9.0 Temp. in cable tanks: fore tank 76½° F., main tank 77° F., after tank 78° F.

NOON. Light N'ly airs. Fine and clear.  
Bar. 30·210 (76° F.). Temp. 77°·9 F. dry, 73° F. wet. Sea surface 76°·9 F.

P.M.  
2.10 Lighters with coal came alongside.

2.38 Commenced shipping coal in bunkers.

4.58 Received the following telegram from Mr. M. H. Gray at Rio :—"Matters satisfactorily concluded."

S.S. "SILVERTOWN."

HOOR.	TUESDAY, JULY 12TH, 1892— <i>contd.</i>
P.M. 5.15	Sent the following telegram to Messrs. Wilson, Sons, & Co. for dispatch to Mr. M. H. Gray at Rio de Janeiro:—"Thanks for telegram. Congratulations. Expect to finish coaling to-morrow."
MIDNT.	Coaling ship proceeding all night.
	WEDNESDAY, JULY 13TH, 1892.
A.M. 9.15	Finished shipping coal. TOTAL AMOUNT OF COAL SHIPPED SINCE YESTERDAY=350 TONS, MAKING THE TOTAL AMOUNT OF COAL NOW ON BOARD=760 TONS, VIZ., 142 TONS IN FORE HOLD AND 618 TONS IN BUNKERS.
9.35	Mr. H. P. Daley left for shore with ship's mail.
NOON.	Light NNW breeze. Fine, bright and clear. Bar. 30.214 (74° F.). Temp. 77°·5 F. dry, 72°·8 F. wet. Sea surface 76°·7 F. Draught { Forward 27' 6". of ship { Aft 30' 8".
P.M. 2.40	Telegram for Mr. H. Benest brought on board, announcing that Mr. M. H. Gray was suffering from severe attack of fever.
2.58	Mr. H. Benest left in gig for the Barra, to speak with Mr. Parsoné at Rio de Janeiro.
3.25	R.M.S. "Clyde" arrived from the S'd.
9.50	R.M.S. "Clyde" left for the N'd.
	THURSDAY, JULY 14TH, 1892.
A.M. 9.55	Mr. H. Benest left for shore, to proceed to the telegraph office at the Barra for the purpose of speaking with Mr. Parsoné at Rio de Janeiro.
NOON.	Moderate S'y breeze. Fine, but cloudy. Bar. 30.339 (76° F.). Temp. 75°·4 F. dry, 71°·8 F. wet. Sea surface 75°·8 F. During the day tests taken on all cable in tanks; results satisfactory.

S.S. "SILVERTOWN."

Hour.	FRIDAY, JULY 15 <sup>TH</sup> , 1892.
NOON.	Moderate SSE breeze. Cloudy, with passing showers of rain. Bar. 30·394 (76° F.). Temp. 74°·6 F. dry, 72°·7 F. wet. Sea surface 76°·2 F. Temp. in cable tanks : fore tank 76½° F., main tank 77° F., after tank 77½° F. Tests taken on all cable in tanks ; results satisfactory.
P.M. 3.25	R.M.S. "Magdalena" arrived from the north.
4.40	Provisions brought alongside.
5.54	Mr. J. F. Lumsden and J. Pereira (2nd Steward) left for the R.M.S. "Magdalena" for passage to Rio de Janeiro, to assist in nursing Mr. M. H. Gray.
6.0	Weighed anchor and set on slow towards the "Magdalena."
6.40	Set on for Rio de Janeiro.
	NOTE.—In consequence of the serious turn Mr. M. H. Gray's illness had taken, and while awaiting instructions from England, it was decided to proceed to Rio, with the intention, if the state of fever permitted, of taking Mr. Gray on board.



STEAMING TO RIO DE JANEIRO.

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S.S. "SILVERTOWN."

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JULY 15TH TO JULY 19TH, 1892.

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# STEAMING TO RIO DE JANEIRO.

## S.S. "SILVERTOWN."

FRIDAY, JULY 15TH, 1892— <i>contd.</i>	
Hour. P.M. 8.15	Commenced to pump water out of cable tanks.
10.35	Morro S. Paulo Light abeam. Finished pumping water out of cable tanks.
MIDNT.	Fresh SE breeze. Cloudy, with passing showers of rain. Moderate SE sea.
SATURDAY, JULY 16TH, 1892.	
A.M. 2.5	S.S. "Magdalena" passed, bound south.
NOON.	Moderate SE by E breeze. Fine, bright and clear. Bar. 30·390 (79° F.). Temp. 75°·8 F. dry, 70° F. wet. Sea surface 76° F. Position by { Lat. 14° 48' S. observations { Long. 38° 33' W. Current observed since 8 p.m. yesterday=N 26° W, 10·2 N.M.=0·6 kt. Distance run since 8 p.m. yesterday=117 N.M. Tests taken on all cable; results satisfactory.
SUNDAY, JULY 17TH, 1892.	
A.M. 6.4	Position { Lat. 17° 4'·5 S. by stars { Long. 38° 16'·0 W. Current observed since noon yesterday=N, 4·8 N.M.= 0·3 kt.
11.0	General muster of all hands and boat stations. Ship inspected by Mr. H. Benest, Capt. Thomson, and Dr. Cruttwell.

*Steaming to Rio de Janeiro.*

S.S. "SILVERTOWN."

Hour.

SUNDAY, JULY 17<sup>TH</sup>, 1892—*contd.*

NOON.

Light NNE airs and calms. Fine clear weather.  
Bar. 30.300 (77° F.). Temp. 77°·8 F. dry, 68°·3 F. wet.  
Sea surface 76°·2 F.  
Position by { Lat. 17° 49'·6 S.  
observations { Long. 38° 15'·7 W.  
Current observed since 6 a.m. = N 31° W, 2·9 N.M. =  
0·5 kt.  
Distance run since noon yesterday = 183 N.M.

MONDAY, JULY 18<sup>TH</sup>, 1892.

A.M.

6.20

Position { Lat. 20° 2'·0 S.  
by stars { Long. 39° 30'·3 W.  
Difference or set since noon yesterday = N 53° W, 4·2 N.M.

7.38

Mount Mestre Alvaro bearing N 86° W true, 46 N.M. distant,  
giving lat. 20° 13'·8 S, long. 39° 30'·0 W.

NOON.

Moderate NNW breeze. Fine and clear.  
Bar. 30.250 (72° F.). Temp. 72° F. dry, 66°·3 F. wet.  
Sea surface 72°·8 F.  
Position by { Lat. 20° 48'·8 S } Mount Mestre Alvaro  
observations { Long. 39° 51'·5 W } bearing N 33° W.  
Distance run since noon yesterday = 200 N.M.  
Current observed since 6.20 a.m. = S 43° E, 5·8 N.M. =  
1·0 kt.

Tests taken on all cable in tanks; results satisfactory.

P.M.

3.5

Ship's engines stopped for ten minutes for engine room  
purposes.

5.56

Position { Lat. 21° 39'·5 S.  
by stars { Long. 40° 14'·1 W.  
Current observed since noon = S 71° W, 7·0 N.M. =  
1·17 kts.

11 27

Sighted Cape S. Thomé Light bearing N 68° W.



*Steaming to Rio de Janeiro.*

S.S. "SILVERTOWN."

HOUR.	TUESDAY, JULY 19TH, 1892.
A.M.	
0.55	Cape S. Thomé Light abeam, bearing N 35° W, 17 N.M. distant.
	Current observed since 5.56 p.m. yesterday = N 55° E. 5.2 N.M. = 0.65 KT.
9.30	Temp. in cable tanks: fore tank 75° F, main tank 74½° F, after tank 74° F.
10.35	Cape Frio Lighthouse abeam. Fog cleared. Signalled ship's number to signal station.
NOON.	<p>Light NE breeze. Fine and clear.</p> <p>Bar. 30.235 (71° F.). Temp. 70.3° F. dry, 68° F. wet.</p> <p>Sea surface 69.5° F.</p> <p>Position { Lat. 23° 0'.5 S.</p> <p>by land { Long. 42° 11.5 W.</p> <p>Distance run since noon yesterday = 199 N.M.</p> <p>No current observed since 0.55 a.m.</p>
P.M.	
4.45	<p>Maricas Islands abeam.</p> <p>Tests taken on all cable in tanks; results satisfactory.</p>
5.45	Passed between Pai and Mai Islands.
6.40	Let go anchor a little to seaward of Fort Villegagnon to await pratique.



AT RIO DE JANEIRO.  
STEAMING TO PERNAMBUCO.

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S.S. "SILVERTOWN."

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JULY 20TH TO JULY 26TH, 1892.

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# AT RIO DE JANEIRO, AND STEAMING TO PERNAMBUCO.

S.S. "SILVERTOWN."

Hour.	
A.M.	WEDNESDAY, JULY 20TH, 1892.
7.22	Weighed anchor and set on for anchorage off Rat Island.
7.45	Received pratique.
8.32	Let go anchor in $19\frac{1}{2}$ fms. of water off Rat Island, Rio de Janeiro.
9.0	Mr. E. W. Parsoné, accompanied by Mr. J. F. Lumsden and J. Pereira (2nd Steward), came on board.
11.0	Capt. Thomson left in ship's steam-launch for shore to get bill of health.
NOON.	Light N'y airs. Fine and clear. Bar. 30.240 (73° F.). Temp. 72°.5 F. dry, 67°.2 F. wet. Sea surface 68° 8 F. Draught { Forward 27' 6". of ship { Aft 28' 6".
P.M. 1 48	Mr. R. J. Reidy, Manager of the Western and Brazilian Telegraph Company, came on board. NOTE.—A consultation having taken place between Dr. Cruttwell and the doctor attending Mr. M. H. Gray, it was decided that Mr. M. H. Gray's condition would not permit of his removal to the ship, and that he must remain at Rio until further recovered from the fever.
4.33	The following telegram was sent to Pernambuco :—"To Keiller, Pernambuco. Look for 'Silvertown' morning twenty-seventh inst. Please have large lighter and steam-tug ready alongside for Shore-End cable. Also one hundred tons coal in readiness, weather permitting. Benest."
5.0	Commenced to heave up anchor.

*Steaming from Rio de Janeiro to Pernambuco.*

S.S. "SILVERTOWN."

Hour.	WEDNESDAY, JULY 20TH, 1892— <i>continued.</i>
P.M. 5.15	Gig returned, hoisted it up. Anchor up. Set on for Pernambuco.
5.45	Passed Fort Santa Cruz.
6.25	Pai Island abeam bearing N $21\frac{1}{2}^{\circ}$ E, 1 N.M. distant.
7.44	Maricas Islands bearing N, $2\frac{1}{2}$ N.M. distant.
11.0	Sighted Cape Frio Light bearing N $80^{\circ}$ E.
MIDNT.	Moderate ENE wind, freshening. Fine and clear.

THURSDAY, JULY 21ST, 1892.

A.M. 2.27	Cape Frio Lighthouse bearing N, $3\frac{1}{2}$ N.M. distant.
NOON.	Fresh NE by N breeze. Fine and clear. Moderate sea from NE. Bar. 30.275 ( $73^{\circ}$ F.). Temp. $71^{\circ}4$ F. dry, $68^{\circ}4$ F. wet. Sea surface $68^{\circ}8$ F. Position by { Lat. $22^{\circ}30'2$ S. observations { Long. $41^{\circ}0'0$ W. Difference or set since 2.27 a.m.=S $38^{\circ}$ E, 1.8 N.M. (No current.) Distance run since 6.30 p.m. yesterday=134 N.M.
P.M. 10.0	Since 8 p.m. ran water into main and after cable tanks ; water now within 6 or 7 flakes of the top of the cable in each tank. Fore tank left dry.

FRIDAY, JULY 22ND, 1892.

A.M. 5.46	Position { Lat. $20^{\circ}58'0$ S. by stars { Long. $39^{\circ}36'3$ W. Current observed during last 12 hours=S $11^{\circ}$ E, 4.6 N.M.=0.4 kt.
9.0	Temp. in cable tanks : fore tank $73\frac{1}{2}^{\circ}$ F., main tank $72\frac{1}{2}^{\circ}$ F., after tank $72\frac{1}{2}^{\circ}$ F.
NOON.	Moderate N'ly breeze. Fine and clear. Bar. 30.300 ( $75^{\circ}$ F.). Temp. $74^{\circ}8$ F. dry, $70^{\circ}3$ F. wet. Sea surface $73^{\circ}3$ F.

*Steaming from Rio de Janeiro to Pernambuco.*

S.S. "SILVERTOWN."

HOUR.	FRIDAY, JULY 22ND, 1892— <i>contd.</i>
P.M.	Position by { Lat. $20^{\circ} 22' 2''$ S. observations { Long. $39^{\circ} 16' 2''$ W. Current observed since 5.46 a.m.=S, 5.0 N.M.=0.8 KT. Distance run since noon yesterday=164 N.M. During the morning tests taken on all cable in tanks; results satisfactory.
9.15	Ship's engines stopped for 5 minutes for engine room purposes.
	SATURDAY, JULY 23RD, 1892.
A.M.	Abrolhos Lighthouse abeam, bearing N $64^{\circ}$ W, 15 N.M. distant.
8.18	Difference or set since noon yesterday=W, 3.8 N.M.=0.2 KT. current.
NOON.	Calm. Fine and clear. Moderate E'ly swell. Ship rolling at times. Bar. 30.290 (75° F.). Temp. 73° 5 F. dry, 69° 6 F. wet. Sea surface 76° F. Position by { Lat. $17^{\circ} 40' 1''$ S. observations { Long. $38^{\circ} 12' 0''$ W. Current observed since 8.18 a.m. = S $33^{\circ}$ E, 3.1 N.M. = 0.8 KT. Distance run since noon yesterday=175 N.M.
P.M.	Position { Lat. $17^{\circ} 1' 0''$ S. by stars { Long. $37^{\circ} 54'$ W. Current observed since noon=S $29^{\circ}$ W, 3.3 N.M.=0.55 KT.
6.0	
	SUNDAY, JULY 24TH, 1892.
A.M.	Position { Lat. $15^{\circ} 37' 8''$ S. by stars { Long. $37^{\circ} 13' 8''$ W. Current observed since 6 p.m. yesterday=S $77^{\circ}$ W, 3 N.M. = 0.25 KT.
6.0	
11.0	General muster and boat stations. Ship inspected by Mr. H. Benest, Capt. Thompson, and Dr. Cruttwell.
NOON.	Light to moderate ESE and variable winds. Fine, but cloudy, with rain at times. Moderate E'ly swell. Bar. 30.295 (76° F.). Temp. 73° 8 F. dry, 70° F. wet. Sea surface 75° 4 F.

*Steaming from Rio de Janeiro to Pernambuco.*

S.S. "SILVERTOWN."

Hour.	SUNDAY, JULY 24 <sup>TH</sup> , 1892— <i>contd.</i>
NOON.	Position by { Lat. 14° 57'·4 S. observations { Long. 36° 53'·2 W. Current observed since 6 a.m.=S 18° W, 2·1 N.M.=0·35 KT. Distance run since noon yesterday=180 N.M.
P.M. 4.0	Light to moderate variable winds. Threatening appearance to N'd. Moderate swell.
	MONDAY, JULY 25 <sup>TH</sup> , 1892.
A.M. 6.0	Position { Lat. 12° 40'·4 S. by stars { Long. 36° 12'·8 W. Current observed since noon yesterday=N 54° W, 10·9 N.M.=0·6 KTS.
NOON.	Moderate SE wind. Fine and clear. Moderate sea and swell from E'd. Ship rolling heavily at times. Bar. 30·280 (78° F.). Temp. 76°·3 F. dry, 71° F. wet. Sea surface 77°·8 F. Position by { Lat. 11° 55'·9 S. observations { Long. 35° 57'·8 W. Current observed since 6 a.m.=N 40° W, 1·7 N.M.=0·3 KT. Distance run since noon yesterday=190 N.M.
P.M. 6.0	Position { Lat. 11° 7'·5 S. by stars { Long. 35° 44'·5 W. Current observed since noon=N 41° W, 5 N.M.=0·83 KT.
10.0	Ship's engines have been working at about half speed since 7.30 p.m., for engine room purposes, but now running at full speed again.
	TUESDAY, JULY 26 <sup>TH</sup> , 1892.
A.M. 5.47	Position { Lat. 9° 43'·0 S. by stars { Long. 35° 3'·8 W. Current observed since 6 p.m. yesterday=N 46° E, 15·1 N.M.=1·25 KT.
9.0	Temp. in cable tanks: fore tank 75° F., main tank 76° F., after tank 76½° F.



*Steaming from Rio de Janeiro to Pernambuco.*

S.S. "SILVERTOWN."

Hour.	TUESDAY, JULY 26TH, 1892— <i>contd.</i>
NOON.	<p>Moderate SE breeze. Fine and clear. Moderate decreasing E'ly swell.</p> <p>Bar. 30·200 (78° F.). Temp. 77° F. dry, 71° F. wet. Sea surface 78° F.</p> <p>Position by { Lat. 8° 56'·2 S. observations { Long. 34° 57'·0 W.</p> <p>Current observed since 5.47 a.m.=N 45° W, 3·7 N.M.=0·6 KT.</p> <p>Distance run since noon yesterday=188 N.M.</p> <p>Since 11 a.m. ran water into fore tank till cable almost covered.</p>
P.M. 1.45	Sighted Cape Agostinho Lighthouse.



AT PERNAMBUCO.

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TRANSFERRING SHORE - END CABLE TO  
LIGHTER.

COALING.

LANDING HUT AND STORES.

BEARINGS OF TUG TAKEN WHILE LAYING  
OUT SHORE-END.

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S.S. "SILVERTOWN."

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JULY 26TH TO JULY 30TH, 1892.

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# AT PERNAMBUCO.

## S.S. "SILVERTOWN."

Hour. P.M.	TUESDAY, JULY 26TH, 1892— <i>contd.</i>
2.15	S. Aleixo Island abeam, 6 miles distant.
4.12	Cape Agostinho abeam bearing N 84° W, 3 N.M. distant. Current observed since noon = N 7° E, 4.0 N.M. = 1.0 KT.
6.57	Let go anchor in 8½ fms. off the Reef Lighthouse, Pernambuco.
7.25	Commenced to heave up anchor again.
7.40	Anchor up.
7.55	Moored ship with both anchors in 8 fms. of water, 45 fms. of chain on both anchors. Position { Lat. 8° 3' 36 S. of ship { Long. 34° 51' 22 W. Olinda Lighthouse bearing N 9° E and Picao Lighthouse bearing S 72° W. NOTE.—Chief Engineer handed in a memorandum stating 450 tons of coal now remaining on board ( <i>i.e.</i> , about 300 tons in bunkers and about 150 tons in fore hold).

## WEDNESDAY, JULY 27TH, 1892.

A.M.	
7.20	Received pratique. Draught { Forward 27' 6" } Approx. only on account of of ship { Aft 28' 4" } the swell.
7.30	Messrs. Keiller and Jones, of Messrs. Wilson, Sons, & Co., Mr. G. H. Bailey, and Senhor Albuquerque came on board. Messrs. Wilson, Sons, & Co.'s steam-tug brought alongside the lighter "Ypiranga" for Shore-End cable. The "Ypiranga" made fast to ship on starboard side amidships.
7.45	Commenced to run water into fore tank to completely cover the cable.

S.S. "SILVERTOWN."

Hour.	WEDNESDAY, JULY 27 <sup>TH</sup> , 1892— <i>contd.</i>
A.M	Temp. in fore tank 76½° F. Doctor of port's representative and his assistants, who have been disinfecting ship, left for shore.
8.20	Finished running water into fore cable tank.
8.40	Carpenters and cable hands set about rigging the "Ypiranga" with paying-out baulks and the necessary gear for laying Shore-End.
8.45	Messrs. H. Benest and R. E. Peake, accompanied by Messrs. Keiller and G. H. Bailey, left for shore, taking with them a flag and flagstaff to mark site for cable hut.
<b>Transferring Shore-End Cable to Lighter.</b>	
9.8	Another lighter brought off to ship by tug, and made fast on port side forward to take in the drums of land-line cable, &c. Crew and several of the cable hands rigging fore derricks ready for lifting the drums of land-line cable, &c., off main deck into lighter, and stores from fore hold.
9.50	Tests taken on all cable in fore tank by Mr. W. Bent ; results satisfactory.
9.56	Lighters with coal in bags came alongside aft (starboard side).
10.18	Commenced shipping coal in bunkers.
10.34	Passed sand anchors, spider wheels, ropes, tackles, &c., down into the "Ypiranga" ready for use in landing and laying out Shore-End.
10.35	A lighter with coal in bags came alongside aft (port side).
10.50	Sealed end of Shore-End cable, Type No. 2146, pt. Sec. "3" (india-rubber core), in fore tank.
10.55	Commenced taking in coal in bunkers from lighter on port side of ship.
11.5	Pumped sufficient water out of fore tank to leave the Shore-End cable dry.

## S.S. "SILVERTOWN."

HOUR.	Transferring Shore-End Cable to Lighter— <i>contd.</i>
A.M.	WEDNESDAY, JULY 27 <sup>TH</sup> , 1892— <i>contd.</i>
11.35	Commenced transferring to the lighter "Ypiranga" 4 N.M. of Shore-End cable, No. 2146, pt. Sec. "3," in fore tank, with starboard picking-up drum. Marking cable at each $\frac{1}{4}$ N.M. with spunyarn.
11.47	Mr. Jones, of Messrs. Wilson, Sons, & Co., came on board.
11.51	0.25 N.M. of Shore-End cable coiled in lighter.
NOON.	Light SSW breeze. Cloudy, with passing showers of rain. Moderate swell. Bar. 30.186 (76° F.). Temp. 75°.4 F. dry, 72° F. wet. Sea surface 78° F.
P.M.	0.3 Factory mile-mark No. 2 in Shore-End cable passed off drum into lighter.
	Length by picking-up Drum measurement = 0.449 N.M. Length by Factory measurement. . . . = 0.500 N.M.  Difference . . . . = - 0.051 N.M.
0.5	0.50 N.M. of Shore-End cable coiled in lighter.
0.20	0.75 N.M. of Shore-End cable coiled in lighter.
0.32	1.00 N.M. of Shore-End cable coiled in lighter.
0.45	1.25 N.M. of Shore-End cable coiled in lighter.
0.58	Factory Mile-mark No. 3 in Shore-End cable passed off drum into the "Ypiranga." Difference between Mile-marks 2 and 3:— Length by picking-up Drum measurement = 1.006 N.M. Length by Factory measurement . . . = 1.000 N.M.  Difference . . . . = + 0.006 N.M.
	NOTE.—A little slip on the drum accounts for the slight difference in the length by the drum between Mile-marks Nos. 2 and 3.

S.S. "SILVERTOWN."

HOUR.	Transferring Shore-End Cable to Lighter. Coaling.
P.M.	WEDNESDAY, JULY 27 <sup>TH</sup> , 1892— <i>contd.</i>
1.0	Cable hands stopped work for dinner.
1.3	Mr. H. Benest, accompanied by Mr. J. Rymer-Jones, returned to ship. While on shore Mr. Benest, in company with Mr. Peake, selected site for cable hut, and examined route for land line cable.
1.22	Lowered port surf boat.
1.28	Hoisted "blue ensign" at fore yard as a signal to shore that one coal lighter is now empty and another is required.
1.30	Cable hands resumed coiling Shore-End cable in "Ypiranga.
1.40	1.50 N.M. of Shore-End cable coiled in lighter. Lowered Buoys 51 and 52 into the water and made them fast astern of port surf boat alongside, and put 2 flagstaffs, Flags B and V and 2 cages, with 2 $\frac{5}{8}$ " bridles, 2 15-fm. lengths of $\frac{3}{4}$ " chain and 2 mushrooms=3 cwt. 0 qr. 24 lbs. and 2 cwt. 3 qrs. 25 lbs. in weight respectively, in surf-boat as moorings for the Buoys 51 and 52 which are to be put down as mark-buoys along route for Shore-End cable.
1.54	1.75 N.M. of Shore-End cable coiled in lighter.
2.4	Messrs. H. Benest, R. S. Lloyd, and P. Bates, accompanied by Mr. Jones, of Messrs. Wilson, Sons, & Co. (to act as interpreter on board tug), left in Messrs. Wilson, Sons, & Co.'s steam-tug "Imperador," with surf boat and Buoys 51 and 52 in tow, to place mark-buoys along route for Shore-End; 3 to 5 N.M. out. Tug, in passing, hailed ship, "Take bearing of tug when flag hoisted at her masthead."
2.17	2.00 N.M. of Shore-End cable coiled in lighter.
2.33	2.25 N.M. of Shore-End cable coiled in lighter.
2.37	A quantity of stores and provisions came alongside.
2.45	Factory Mile-mark No. 4 in Shore-End cable passed off drum into the "Ypiranga." 1.000 N.M. between Mile-marks Nos. 3 and 4, both by starboard picking-up drum and by Factory measurements.



*At Pernambuco.*  
S.S. "SILVERTOWN."

HOOR.  
P.M.

**Transferring Shore-End Cable to Lighter—*contd.***

WEDNESDAY, JULY 27<sup>TH</sup>, 1892—*contd.*

Difference between Mile-marks 3 and 4 :—

Length by picking-up Drum measurement = 1·000 N.M.

Length by Factory measurement .. = 1·000 N.M.

0·000 N.M.

- 2.48 Tug flying flag at her masthead bearing N 65° E. Tug let go a mark-buoy.
- 2.51 2·50 N.M. of Shore-End cable coiled in lighter.
- 3.10 2·75 N.M. of Shore-End cable coiled in lighter.  
Tug again flying flag at her masthead, and letting go second mark-buoy; bearing N 65½° E.
- 3.25 3·00 N.M. of Shore-End cable coiled in lighter.
- 3.30 Finished coaling for the day. About 100 tons of coal shipped in bunkers to-day.
- 3.41 3·25 N.M. of Shore-End cable coiled in lighter.
- 3.53 Mr. J. Rymer-Jones left for shore.  
Factory Mile-mark No. 5 in Shore-End cable, No. 2146, pt. Sec. "3," in fore tank, passed off drum into the "Ypiranga." 0·997 N.M. between Mile-marks Nos. 4 and 5 by starboard picking-up drum, against 1·000 N.M. by Factory measurement.
- 3.57 3·5 N.M. of Shore-End cable coiled in lighter.
- 4.8 Messrs. Benest, Lloyd, Bates, and Jones returned in the tug "Imperador" to ship, after placing Mark-buoys No. 52 V, in 8 fms. in Lat. 8° 2'·5 S, Long. 34° 49'·0 W, and No. 51<sup>B</sup> in 12 fms. in Lat. 8° 2'·2 S, Long. 34° 48'·1 W. Surf boat brought back in tow of tug; and at once hoisted up.
- 4.11 3·75 N.M. of Shore-End cable coiled in lighter.
- 4.30 4·00 N.M. of Shore-End cable coiled in lighter.  
Stopped transferring cable to the "Ypiranga."
- 4.45 Cut Shore-End cable, No. 2146, pt. Sec. "3," close to starboard picking-up drum. 4·00 N.M. of Shore-End, No. 2146, pt. Sec. "3," from fore tank coiled into the lighter "Ypiranga"

S.S. "SILVERTOWN."

Hour.

**Transferring Shore-End Cable to Lighter—contd.**

P.M.

WEDNESDAY, JULY 27<sup>TH</sup>, 1892—contd.

for part of the Pernambuco Shore-End of the Pernambuco—Fernando Noronha Section, to be laid out to-morrow and buoyed ready for ship to splice on later.

7.0 N.M.—4.0 N.M.=3.0 N.M. OF SHORE-END CABLE, No. 2146, PT. SEC. "3," REMAINING IN FORE TANK.

4.50

Mr. Jones, of Messrs. Wilson, Sons, & Co., left for shore in the tug "Imperador," taking in tow the small empty lighter which was brought alongside ship at 9.8 a.m. for land-line cable. Unable to put the land-line cable in this lighter to-day, owing to the lighter "Ypiranga" being in the way of ship's forward cargo doors.

5.14

Sealed the end of the 4 N.M. length of Shore-End cable, No. 2146, pt. Sec. "3," from fore tank, and passed the end down into the lighter "Ypiranga." Cable in lighter then covered with tarpaulins.

5.20

Mr. R. E. Peake returned to ship, accompanied by Messrs. Keiller, G. H. Bailey, and F. W. Knight. Cable hands commenced putting Cable Hut "B" and fittings in the lighter "Ypiranga."

6.30

Finished putting Cable Hut "B" in the "Ypiranga." Set about putting into the same lighter 12 balloon buoys and No. 50 Buoy, fitted with a flagstaff (blue flag) and cage, and the following moorings:—25 fms. of  $\frac{3}{4}$ " chain 1  $\frac{5}{8}$ " bridle and 1 mushroom=3 cwt. 0 qrs. 14 lbs. ready for buoying end of Shore-End on board the "Ypiranga" when laid out to seawards to-morrow.

6.57

Steam-tug took the "Ypiranga," containing Shore-End cable, Cable Hut "B," and all the gear required for landing, laying, and buoying Shore-End, in tow for anchorage inside the reef.

9.17

Messrs. Keiller, Bailey, and Knight left ship.

**Coaling.**

THURSDAY, JULY 28<sup>TH</sup>, 1892.

A.M.

6.58

Messrs. Wilson, Sons, & Co.'s steam-tug "Moleque" brought an empty lighter alongside. Set about putting the three drums of land-line cable (Type No. 2177, 1.25 N.M. on each drum) into the lighter.

*At Pernambuco.*  
S.S. "SILVERTOWN."

Hour. A.M.	Coaling— <i>contd.</i>
THURSDAY, JULY 28TH, 1892— <i>contd.</i>	
	Temp. in fore tank 77° F.
8.40	Shore boat came alongside with provisions.
9.29	Messrs. H. Benest and P. F. Anstruther left for shore in shore boat. No signs of steam-tug (to take cable hands in to land Shore-End) coming out from the harbour, although it was ordered to be alongside ship at 8 a.m.
10.12	Observed tug coming out from the harbour. Lowered both surf boats.
10.20	Tug came alongside, with a lighter, containing coal in bags.
10.33	Commenced taking in coal in bunkers. Messrs. F. W. Robinson, R. E. Peake, H. B. Forde, R. S. Lloyd, P. Bates, T. Rymer-Jones, A. Fletcher, and C. Cazalet, with D. Smith (general foreman), 27 cable hands, Brown and Healey (carpenters), Livingstone (fitter), and J. Doyle (of the South American Cable Company's staff), left ship for the steam-tug, to take part in the landing of Shore-End.
10.39	Steam-tug left for the harbour, taking in tow the lighter containing the 3 drums of land-line cable and port surf boat.
11.12	Mr. Jones, of Messrs. Wilson, Sons, & Co., came on board. Cable hands in the harbour appear to be loading railway trucks with the cable hut that was sent into the harbour on board the lighter "Ypiranga" last evening.
NOON.	Light to moderate SW wind. Frequent squalls, with heavy rain. Increasing sea and swell. Bar. 30.196 (75° F.). Temp. 75°·8 F. dry, 71°·6 F. wet. Sea surface 77°·4 F. Temp. in fore tank 77½° F. Crew employed getting a quantity of electrical stores up from port main pocket.
P.M. 0.55	Lighter which brought off coal now empty; about 50 tons shipped in the bunkers to-day.
1.8	Mr. Jones, of Messrs. Wilson, Sons, & Co., left ship, taking in his boat a quantity of electrical stores and instruments for cable hut and station.

S.S. "SILVERTOWN."

Hour.

Coaling—*contd.*

P.M.

THURSDAY, JULY 28TH, 1892—*contd.*

1.16

Messrs. Robinson, Lloyd, Forde, Bates, Jones, Fletcher, and Cazalet, with all hands, except the 2 carpenters and 6 cable hands, who are left ashore to put up cable hut, returned to ship, as the weather appears to be very threatening, and it would not be safe to undertake the landing operations.

NOTE.—Native labourers took cable hut out of the lighter "Ypiranga," and loaded it on railway trucks for transit to landing place.

3 32

Hoisted up both surf boats.

4.0

Fresh S'ly wind, and squally. Overcast and cloudy. Moderate sea and swell in the anchorage.

W. Tillyer (foreman's mate) returned to ship and reported that all the cable hut has been taken to site selected for it, and the foundation for the hut laid. Cable trench has also been dug by labourers, ready for Shore-End.

FRIDAY, JULY 29TH, 1892.

A.M.

6.35

Messrs. Wilson, Sons, & Co.'s steam-tug "Moleque" came out to ship.

6.42

Messrs. R. E. Peake, F. W. Robinson, H. B. Forde, R. S. Lloyd, T. E. Rymer-Jones, A. Fletcher, and C. Cazalet, with D. Smith (general foreman), 27 cable hands, Healey (carpenter), and Livingstone (fitter), left in the "Moleque" for the harbour to take the lighter "Ypiranga" to position off cable landing place and land and lay out Shore-End cable in lighter. Port surf boat in tow of the "Moleque."

7.20

Observed the "Ypiranga" in tow of the tug "Imperador" leaving the harbour; tug "Moleque" in company.

7.30

Lighter "Ypiranga" and tugs now off cable landing place.

7.52

Observed hauling-off rope from the "Ypiranga," landed by jangada, and labourers on beach hauling on it.

8.0

Moderate WSW breeze. Fine, bright, and clear. Moderate swell in the roadstead.

Bar. 30.195 (72° F.). Temp. 70°·3 F. dry, 68° F. wet. Sea surface 77°·5 F.

Observed end of cable from the "Ypiranga" landed.

S.S. "SILVERTOWN."

Hour. A.M.	Coaling— <i>contd.</i>
	FRIDAY, JULY 29 <sup>TH</sup> , 1892— <i>contd.</i>
8.6	Shore signalled, "Enough cable on beach." Labourers now burying cable on beach.
8.25	"All ready" signal hoisted on beach. Tug lying by the "Ypiranga" bearing from ship N 49° W.
8.30	Observed the tug "Imperador" get under weigh with the "Ypiranga" in tow laying Shore-End cable out seawards. NOTE.—Ship taking bearings of tug when flag hoisted at masthead of tug.
8.40	Tug bearing N 43° W. Ship's head S by E.
8.45	" " N 26° W " " "
8.55	" " N 1° E " " "
9.5	" " N 22° E " " "
9.14	" " N 33° E " " S 15° E.
9.23	" " N 40° E " " S ½° E.
9.32	" " N 46° E " " S 5° E.
9.41	" " N 53° E " " S 11° E.
9.47	" " N 57° E " " "
10.1	" " N 58½° E " " S 10° E.
10.5	Tug and lighter apparently stopped to buoy end of cable.
10.15	Cable buoyed by lighter. Buoy bearing N 58° E. Ship's head S 5 E. Tug bearing N 59½° E.
10.20	Tug and lighter "Ypiranga" now returning towards ship.
10.25	Lighter of coal came alongside.
10.55	Resumed shipping coal in bunkers.
11.15	Observed tug and lighter "Ypiranga" stopped, and hands picking up Mark-buoy "52 V," which was put down on 27th inst.
11.22	Tug "Moleque" brought an empty lighter for the station stores alongside. Mr. Jones, of Messrs. Wilson's, and Mr. C. Cazalet returned to ship.

S.S. "SILVERTOWN."

Hour.	Coaling—contd.
A.M.	FRIDAY, JULY 29 <sup>TH</sup> , 1892—contd.
11.40	<p>Tug "Imperador" brought the lighter "Ypiranga," port surf boat, and Buoy No. 52 alongside ship.</p> <p>Messrs. Robinson, Peake, Forde, Lloyd, Jones, and Fletcher, with D. Smith, 21 cable hands, and Livingstone (fitter) returned to ship, having laid the Pernambuco Shore-End. Six cable hands and the two carpenters left on shore at cable landing to erect cable hut, etc.</p> <p>Cable hands at once set about dismantling the "Ypiranga," and passing all cable gear and stores that have been in use on board the lighter in landing and laying Shore-End, on board ship. Also hoisted Buoy 52 on board.</p>
NOON.	<p>Light SSW breeze. Fine and clear.</p> <p>Bar. 30.214 (78° F.). Temp. 77°.4 F. dry, 71°.6 F. wet. Sea surface 77°-8 F.</p>
P.M. 0.15	<p>Mr. Jones, of Messrs. Wilson, Sons, &amp; Co., left ship, taking in his boat 6 joint boxes, Nos. 52 to 57, for land-line cable, and 3 boxes, containing Mr. J. F. Lumsden's private effects, which are to be sent to Rio Janeiro. The tug "Moleque" taking Messrs. Wilson's boat and starboard surf boat in tow for the harbour.</p>
0.24	<p>The lighter "Ypiranga" left ship in tow of the tug "Imperador."</p>
0.50	<p>Commenced loading the lighter alongside, with all stores on board, for the Pernambuco station.</p>
1.20	<p>Messrs. H. Benest, Capt. Thomson, P. F. Anstruther, J. Rymer-Jones, and F. W. Knight, and J. Doyle returned to ship in Messrs. Wilson's boat, which is in tow of the "Moleque"; also starboard surf boat, containing spider wheel, sand anchor, ropes, &amp;c., that have been in use on the beach in landing Shore-End this morning, in tow of the same tug.</p>
1.35	<p>Tug "Moleque" took the lighter, containing all the station stores, in tow for shore.</p>
2.10	<p>FINISHED SHIPPING COAL.</p> <p>TOTAL AMOUNT OF COAL SHIPPED SINCE ARRIVAL HERE ON THE 26<sup>TH</sup> INST.=206 TONS.</p> <p>TOTAL AMOUNT OF COAL NOW ON BOARD (IN BUNKERS AND FOREHOLD)=656 TONS.</p>



## S.S. "SILVERTOWN."

Hour. P.M.	FRIDAY, JULY 29TH, 1892— <i>contd.</i>
2.55	Hoisted up surf boats.
3.30	Empty coal lighter left for shore.
4.28	Boat with provisions came alongside.
5.2	The 6 cable hands and 2 carpenters returned from Shore-End landing place in Messrs. Wilson's boat, in tow of tug "Moleque."
	NOTE.—The cable hut has been erected, but the ventilator, roof, and the inner lining of hut have yet to be fixed, and the brackets, shelves, testing tables, etc., have to be put up. The Shore-End landed this morning has been well buried in a trench 5 feet in depth from low water mark to within 10 feet of the cable hut, where a length of 53 feet on the end of cable has been temporarily buried, pending the completion of cable hut.
	The following measurements were taken at Shore-End landing place to-day :—
	Distance from Cable Hut to High Water mark=135 ft.
	„ „ High Water mark to Low Water mark= .. .. 60 ft.
	Length of Shore-End Cable on beach= .. 248 ft.
	Distance from Cable Hut to High Water mark in the Lagoon at the back of Hut= .. 44 ft.
5.10	Provision boat left ship with 2 bedsteads and bedding for cable hut
8.0	Moderate S'ly breeze. Fine and clear. Moderate swell. Bar. 30.135 (77° F.). Temp. 77° F. dry, 71°·8 F. wet. Sea surface 77°·2 F.
MIDNT.	Moderate SW by W wind. Overcast and squally, with rain.
	NOTE.—Mr. H. Benest agreed to sign a contract, yesterday with Mr. Swainson in Pernambuco, to lay land-lines, on the following basis :—The length of trenching is about 2000 yds. Trench to be 3 ft. in depth, with a minimum width at bottom of 2 ft. so as to take 3 cables. Cables to be laid in trench and buried, and all paving that may be disturbed to be replaced. The joints will be made by ship's jointer later on ; in the meantime, the positions, where these joints occur, are to be clearly marked. The whole work to be completed within 3 weeks from date of signing contract. (For route of trench see plan.)

S.S. "SILVERTOWN."

Hour. A.M	SATURDAY, JULY 30TH, 1892.
4.0	Fresh ESE wind, and squally. Fine, but cloudy. Moderate sea and swell in anchorage.
6.15	Brown and Healey (carpenters), and Campbell and Buckmaster (cable hands), left for shore to complete the cable hut.
10.27	Observed Shore-End on beach (landed yesterday) had become unburied by the surf during the night at low water mark. W. Tillyer (foreman's mate) left for shore to rebury cable.
NOON.	Moderate S wind. Fine and clear. Moderate sea and swell. Bar. 30.220 (77° F.). Temp. 76°.5 F. dry, 71° 8 F. wet. Sea surface 77° 8 F.
P.M. 0.30	Señhor Alvaro de Mello Coutinho de Vilhena (Engineer-in-Chief of the Government Telegraphs), Senor Francisco de Sousa Motha (Assistant Controller of Customs), Mr. E. Brotherhood (Engineer to the Recife Drainage Company), Mr. G. H. Bailey, and a number of other visitors came on board.
1.35	Received on board a quantity of provisions, to be landed at Fernando de Noronha, for the South American Cable Company's staff.
3.55	Messrs. Wilson, West, and Goggin, of the South American Cable Company, and W. Tillyer (foreman's mate), came on board. Mr. West proceeds in ship to Fernando Noronha. Tillyer reports having to-day reburied Shore-End cable at low water mark, and put the end of the cable into cable hut. About 26 feet of slack on the end of cable was left buried just outside the hut.
6.45	The 2 carpenters and 2 cable hands who have been working at cable hut returned to ship, bringing tools and the remainder of gear from the cable landing place. The cable hut has to-day been completed. While ship is away at Fernando Noronha, Mr. Rymer-Jones will fix up all the necessary instruments and testing apparatus in the cable hut ready for use on ship's return to this port.

NOTE.—Mr. Benest went ashore this afternoon for the purpose of signing the contract with Mr. Swainson for the



*At Pernambuco.*  
S.S. "SILVERTOWN."

HOUR. P.M	SATURDAY, JULY 30TH, 1892— <i>contd.</i>
	laying of the land-line cable; Mr. Swainson had not arrived at Messrs. Wilson, Sons, & Co.'s office, as arranged, up to 6 p.m., when Mr. Benest had to return to ship.
7.0	Hoisted up boats and made all ready for putting to sea at daybreak to-morrow.
8.0	Fresh ESE wind, and squally. Fine, but cloudy. Heavy swell in anchorage. Bar. 30.185 (75° F.). Temp. 75°·3 F. dry, 71° F. wet Sea surface 77° F.
MIDNT.	Moderate S by E wind. Overcast, with rain.



LAYING THE PERNAMBUCO—FERNANDO DE  
NORONHA SECTION.

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ON BOARD LIGHTER “YPIRANGA.”

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LANDING AND LAYING PERNAMBUCO  
SHORE-END.

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JULY 29TH, 1892.

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# LAYING THE PERNAMBUCO—FERNANDO NORONHA SECTION.

## ON BOARD LIGHTER "YPIRANGA."

<p>Hour. A.M.</p>	<p>Landing Pernambuco Shore-End.</p>
<p>FRIDAY, JULY 29TH, 1892.</p>	
<p>6.42</p>	<p>Tug "Moleque" left S.S. "Silvertown" with staff and cable hands.</p>
<p>7.6</p>	<p>Mr. Cazalet, with 6 cable hands and carpenter Healey, left the "Moleque," proceeding to Shore-End landing place.</p>
<p>7.9</p>	<p>Messrs. Peake, Forde, Lloyd, and Fletcher, with 1 cable hand, went on board the tug "Imperador."</p>
<p>7.10</p>	<p>Messrs. Robinson and T. Rymer-Jones, with D. Smith (general foreman), and 20 cable hands and Livingstone (fitter), joined the "Ypiranga."</p>
<p>7.20</p>	<p>"Ypiranga" left the harbour in tow of tug "Imperador" for Shore-End landing place. Port surf boat also in tow; tug "Moleque" with Mr. Jones, of Messrs. Wilson, Sons, &amp; Co., in company.</p>
<p>7.30</p>	<p>Stopped off Shore-End landing place, "Imperador" anchoring a little to seawards in 4 fms., "Ypiranga" lying in about <math>3\frac{1}{2}</math> fms. of water, about 90 fms. off beach, and 60 fms. astern of tug. Fifty-two native labourers and 6 cable hands on beach, some of whom are employed opening out cable trench which had become partially filled up since yesterday. Brown and Healey, carpenters, working at the erection of cable hut.</p>
<p>7.33</p>	<p>Bent cable on to hauling-off rope and then passed rope into surf boat.</p>

ON BOARD LIGHTER "YPIRANGA."

Hour. A.M.	Landing Pernambuco Shore-End— <i>contd.</i>
	FRIDAY, JULY 29 <sup>TH</sup> , 1892— <i>contd.</i>
7.35	Tug "Moleque" towed "Ypiranga's" stern round more towards beach.
7.43	Surf boat left for the beach paying out hauling-off rope on the way.
7.48	Surf boat close to surf. Position of Pernambuco { Lat. 8° 2'·92 S. Hut { Long. 34° 52'·20 W.
7.50	A jangada (small fishing raft) passed rope from surf boat to natives swimming out from beach, who landed end of rope.
7.53	Natives on beach commenced hauling on rope, which is fast to end of Shore-End cable.
7.54	End of Shore-End passed over "Ypiranga's" stern with a balloon buoy attached.
8.0	End of Shore-End cable, No. 2146, pt. Sec. "3," ex S.S. "Silvertown's" fore tank, on beach. "Ypiranga" now lying in 3 fms. of water.
8.6	Shore signalled, "Enough cable ashore." Natives on beach laid cable in trench and commenced to bury it.
8.10	Surf boat took balloon buoys off cable.
8.15	Signalled to shore, "Keep rope ashore."
	Position of the tug { North End of Fort Buraco and "Imperador," 60 fms. { Cable House .. .. 92° 3'. to seaward { Cable House and Dome .. 39° 30'. of "Ypiranga." { Picao Lighthouse and Dome 59° 10'. { S.S. "Silvertown" bearing S 49° E.
8.25	Hoisted "All ready" signal.
8.30	Tug "Imperador" heaving up anchor.

Laying Pernambuco Shore-End.

8.36	Set on in tow of the tug "Imperador," laying Shore-End cable seawards. Surf boat in tow.
8.42	0·25 N.M. paid out from Hut.

ON BOARD LIGHTER "YPIRANGA."

HOURL.  
A.M.

Laying Pernambuco Shore-End—contd.

FRIDAY, JULY 29TH, 1892—contd.

8.47	0.50 N.M. paid out from Hut.	Position { S.S. "Silvertown" bearing S 26° E
8.53	0.75 " " " " " "	Depth 5½ fms.
8.59	1.00 " " " " " "	6¾ " "
	Position { N end of Fort Buraco and Cable House 103° 42'.	
	{ S.S. "Silvertown" bearing S 1° W.	Picao Lighthouse 48° 42'.
9.3	1.25 N.M. paid out from Hut.	
9.7	1.50 N.M. paid out from Hut.	Depth 7¼ fms
	Position { N end of Fort Buraco and E house Olinda 88° 17'.	
	{ S.S. "Silvertown" bearing S 22° W.	Picao Lighthouse 32° 12'.
9.13	1.75 N.M. paid out from Hut.	Depth 7¼ fms.
9.17	2.00 " " " " " "	7½ " "
	Position { N end of Fort Buraco and E house Olinda 75° 48'.	
	{ S.S. "Silvertown" bearing S 33° W.	Picao Lighthouse 24° 38'.
9.21	2.25 N.M. paid out from Hut.	Depth 8½ fms. (coral).
9.26	2.50 " " " " " "	" " " "
	Position { N end of Fort Buraco and E house Olinda 60° 20'.	
	{ S.S. "Silvertown" bearing S 40° W.	Picao Lighthouse 18° 32'.
9.30	2.75 N.M. paid out from Hut.	Depth (?) fms.
9.34	3.00 " " " " " "	6¾ " "
	Position { N end of Fort Buraco and E house Olinda 47° 3'.	
	{ S.S. "Silvertown" bearing S 46° W.	Picao Lighthouse 15° 34'.
9.38	3.25 N.M. paid out from Hut.	Depth 11 fms.
9.43	3.50 " " " " " "	7¼ " "
	Position { N end of Fort Buraco and E house Olinda 38° 35'.	
	{ S.S. "Silvertown" bearing S 53° W.	Picao Lighthouse 13° 45'.
9.49	3.75 N.M. paid out from Hut.	Depth 6½ fms.
	Hailed the "Imperador" to go slower, as approaching end of cable.	

*Laying the Pernambuco—Fernando Noronha Section.*

ON BOARD LIGHTER "YPIRANGA."

Hour.	Laying Pernambuco Shore-End— <i>contd.</i>
A.M.	FRIDAY, JULY 29TH, 1892— <i>contd.</i>
9.56	Stopped tug, and stopped paying-out Shore-End cable.
10.10	Buoyed end of Shore-End with Buoy No. 50, blue flag, in 10 fms. of water. No cage on flagstaff. TOTAL AMOUNT OF CABLE (S.E., No. 2146, PT. SEC. "3") LAID FROM PERNAMBUCO HUT TO THIS BUOY=4.0 N.M. Position of Buoy 50 { N end of Fort Buraco and E house Olinda 34° 33'. " " " " " Picao Lighthouse 13° 16' " " " " " Olinda Lighthouse 39° 36'. S.S. "Silvertown" bearing S 58° W. Moorings of buoy:— 1 $\frac{5}{8}$ " bridle. 25 fms. $\frac{3}{4}$ " chain. 1 mushroom=3 cwt. 0 qrs. 14 lbs.
10.12	Set on to take a few soundings round Buoy 50, to make certain of there being sufficient water in vicinity of buoy for the S.S. "Silvertown" to anchor and splice on to the above end of cable.
10.35	Set on for S.S. "Silvertown." Surf boat in tow.
11.11	Picked up Mark-buoy "52 V," which was put down on the 27th inst.
11.15	Set on again for the "Silvertown," having surf boat and Buoy 52 in tow.
11.40	Arrived alongside S.S. "Silvertown." All staff and cable hands rejoined S.S. "Silvertown."
P.M.	
0.24	All cable gear returned to S.S. "Silvertown." "Ypiranga," in tow of "Imperador," left for the harbour.



SOUNDING BETWEEN PERNAMBUCO AND  
FERNANDO DE NORONHA.

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S.S. "SILVERTOWN."

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JULY 31ST TO AUGUST 2ND, 1892

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# SOUNDING BETWEEN PERNAMBUCO AND FERNANDO NORONHA.

S.S. "SILVERTOWN."

Hour.	
A.M.	SUNDAY, JULY 31 <sup>ST</sup> , 1892.
6.40	Weighed anchors and set on for Fernando Noronha, sounding <i>en route</i> .
7.26	Buoy on end of Shore-End cable and Church in line bearing N 26° W.
7.34	Buoy on end of Shore-End cable and Lighthouse in line bearing N 62½° W.
8.0	Fresh to strong S'ly wind. Fine, but cloudy. Rough sea. Ship rolling. Bar. 30·155 (76° F.). Temp. 74°·3 F. dry, 71° F. wet. Sea surface 76°·5 F.
9.29	Sounding { Lat. 7° 55'·7 S 87 S { Long. 34° 36'·8 W } 25 fms. crl.
10.33	Sounding { Lat. 7° 52'·7 S 88 S { Long. 34° 32'·5 W } 31 fms. n. sn.
11.30	Sounding { Lat. 7° 49'·7 S 89 S { Long. 34° 28'·3 W } 320 fms. n. sn.
NOON.	Strong S'ly wind and squally. Cloudy, with rain at times. Heavy SE sea and swell. Ship rolling. Bar. 30·185 (76° F.). Temp. 74°·8 F. dry, 71°·8 F. wet. Sea surface 78° F. Position by { Lat. 7° 47'·5 S. observations { Long. 34° 26'·8 W. Current observed since 7.18 a.m.=N 5° E, 3·0 N.M.=0·6 KT. Tests taken on cable in fore tank; results satisfactory.
P.M. 0.13	Sounding { Lat. 7° 47'·5 S 90 S { Long. 34° 26'·8 W } 363 fms. h.

*Sounding between Pernambuco and Fernando Noronha.*

S.S. "SILVERTOWN."

Hour.	SUNDAY, JULY 31 <sup>ST</sup> , 1892— <i>contd.</i>
P.M.	
1.25	Sounding { Lat. 7° 47'·4 S 91 S { Long. 34° 22'·3 W } 698 fms. s. cl. and brk. sh.
3.7	Sounding { Lat. 7° 43'·3 S 92 S { Long. 34° 17'·1 W } 1507 fms. s. and cl.
4.0	Strong S by E wind, and squally. Cloudy, with rain Heavy sea and swell from SE.
8.0	Similar weather. Bar. 30·110 (76° F.). Temp. 73°·6 F. dry, 70° F. wet. Sea surface 78° F.
10.23	Sounding { Lat. 7° 16'·7 S 93 S { Long. 33° 49'·8 W } 2358 fms. s. and m.
MIDNT.	Similar weather, but wind decreasing slightly.

MONDAY, AUGUST 1<sup>ST</sup>, 1892.

A.M	
1.7	Sounding { Lat. 7° 7'·9 S 94 S { Long. 33° 43'·7 W } 2411 fms. gl. oz.
3.50	Sounding { Lat. 6° 58'·5 S 95 S { Long. 33° 37'·3 W } 2473 fms. gl. oz.
4.0	Fresh SSW breeze. Overcast and squally, with rain at times. Heavy sea and swell from the S'd.
5.40	Position by { Lat. 6° 51'·0 S. stars { Long. 33° 36'·6 W (approx.).
6.37	Sounding { Lat. 6° 49'·9 S 96 S { Long. 33° 31'·2 W } 1281 fms n. sn. To verify Sounding 96 S took at
7.7	A. Sounding { Lat. 6° 49'·9 S 96 S { Long. 33 31'·2 W } 1270 fms. h.
8.0	Moderate SSE breeze, and squally. Cloudy, with rain at times. Heavy sea and swell from SE. Bar. 30·180 (77° F.). Temp. 75°·5 F. dry, 72°·3 F. wet. Sea surface 79° F.
8.15	Position by { Lat. 6° 44'·0 S. observations { Long. 33° 27'·5 W. Current observed since noon yesterday = N 19° E, 11·3 N.M = = 0·5 kt.

*Sounding between Pernambuco and Fernando Noronha.*

S.S. "SILVERTOWN."

Hour.	MONDAY, AUGUST 1st, 1892— <i>contd.</i>
A.M.	
8.38	Sounding { Lat. $6^{\circ} 44' \cdot 0$ S 97 S { Long. $33^{\circ} 27' \cdot 5$ W } 1541 fms. h.
10.30	Sounding { Lat. $6^{\circ} 40' \cdot 6$ S 98 S { Long. $33^{\circ} 24' \cdot 9$ W } 2463 fms. gl. oz.
NOON.	Moderate SSE breeze. Overcast and squally, with passing showers of rain. Heavy SE sea. Bar. 30·175 ( $78^{\circ}$ F.). Temp. $76^{\circ} \cdot 5$ F. dry, $73^{\circ} \cdot 3$ F. wet. Sea surface $79^{\circ} \cdot 3$ F. Position { Lat. $6^{\circ} 34' \cdot 9$ S. Long. $33^{\circ} 24' \cdot 7$ W.
P.M.	
3.50	Sounding { Lat. $6^{\circ} 10' \cdot 9$ S 99 S { Long. $33^{\circ} 22' \cdot 7$ W } 2485 fms. gl. oz.
4.0	Similar weather, but wind freshening.
6.19	Position by { Lat. $6^{\circ} 0' \cdot 2$ S. stars { Long. $33^{\circ} 19' \cdot 3$ W. Current observed since 8.15 a.m.=S $42^{\circ}$ W, $3 \cdot 5$ N.M.= 0·3 KT.
8.0	Strong SSE wind. Cloudy and squally, with rain at times. Heavy SE sea. Bar. 30·148 ( $78^{\circ}$ F.). Temp. $77^{\circ}$ F. dry, $72^{\circ} \cdot 5$ F. wet. Sea surface $78^{\circ} \cdot 2$ F.
9.32	Sounding { Lat. $5^{\circ} 43' \cdot 0$ S 100 S { Long. $33^{\circ} 14' \cdot 1$ W } 2519 fms. gl. oz.
10.10	Set on towards Fernando Noronha.
MIDNT.	Moderate SE by S wind. Fine, but cloudy. Weather improving. Heavy sea.
Sounding off and Arrival at Fernando de Noronha.	
TUESDAY, AUGUST 2ND, 1892.	
A.M.	
5.50	Position { Lat. $4^{\circ} 54' \cdot 0$ S. by stars { Long. $32^{\circ} 58' \cdot 3$ W. Current observed since 6.19 p.m. yesterday=N $62^{\circ}$ W, $6 \cdot 4$ N.M.=0·5 KT.

*Sounding between Pernambuco and Fernando Noronha.*

S.S. "SILVERTOWN."

Hour. A.M.	Sounding off and Arrival at Fernando de Noronha —contd.
	TUESDAY, AUGUST 2ND, 1892—contd.
8.0	Moderate E'ly breeze. Fine and clear. Moderate sea from SE. Bar. 30·165 (79° F.). Temp. 78°·3 F. dry, 73°·5 F. wet. Sea surface 78°·3 F.
9.0	Temp. in cable tanks : fore tank 78° F., main tank 78½° F., after tank 79° F.
9.50	Position by { Lat. 4° 27'·3 S. observations { Long. 32° 49'·4 W. Current observed since 5.50 a.m.=N 38° W, 3·1 N.M.=0·8 KT.
NOON.	Moderate E by S breeze. Fine and clear. Moderate SE sea. Bar. 30·135 (79° F.). Temp. 77°·8 F. dry, 74° F. wet. Sea surface 79° F. Position by { Lat. 4° 12'·8 S observations { Long. 32° 44'·0 W { Peak of Fernando Noronha bearing N 40½° E, 29 N.M. distant. Difference or set since 9.50 a.m.=W, 1·8 N.M.
P.M. 2.54	Sounding { Lat. 3° 58'·0 S 101 S { Long. 32° 38'·8 W } 1297 fms. Sandstone. This should have been a Temp. sounding, but as the indices of Therm. 87852 shifted, no Temp. was obtained. Peak on Fernando de Noronha Island bearing N 60° E, 15 N.M. distant by vertical angle. The height of the Peak on Fernando Noronha is taken as 1044 feet, as determined by Capt. Thomson on the 27th May last.
4.20	Sounding { Lat. 3° 55'·8 S 102 S { Long. 32° 36'·0 W } 732 fms. h. This should have been a Temp. sounding, but as the indices of Therm. 87852 shifted, no Temp. was obtained. Peak bearing N 63½° E, 12 N.M. distant.
5.21	T. Sounding { Lat. 3° 53'·5 S 103 S { Long. 32° 33'·75 W } 494 fms. s and sh. Bottom temp. by { Max. 88°·7 F., 13·6 mm. Ther. 87859 = { Min. 39°·0 F., 2·67 mm. Surface temp.=79° F. Peak bearing N 68° E, 8·9 N.M. distant.

*Sounding between Pernambuco and Fernando Noronha.*

S.S. "SILVERTOWN."

Hour. P.M.	Sounding off and Arrival at Fernando de Noronha —contd.
	TUESDAY, AUGUST 2ND, 1892—contd.
6.17	Sounding { Lat. $3^{\circ} 51' 6''$ S 104 S { Long. $32^{\circ} 31' 9''$ W } 309 fms. n. sn. Peak bearing N $77\frac{1}{2}^{\circ}$ E, 6.5 N.M. distant, Cape Placelière bearing S $86^{\circ}$ E.
7.19	T. Sounding { Lat. $3^{\circ} 49' 2''$ S 105 S { Long. $32^{\circ} 28' 1''$ W } 610 fms. brk. sh. Bottom temp. by { Max. $81^{\circ} 2$ F., 10.89 mm. Ther. 87859 = { Min. $39^{\circ} 0$ F., 2.63 mm. Surface temp. = $78^{\circ} 2$ F. Peak bearing S $69^{\circ}$ E, Cape Placelière bearing S.
7.30	Set on for anchorage. Since 6 p.m. sufficient water was run into fore tank to cover the cable.
8.0	Moderate SSE breeze. Fine and clear. Bar. 30.136 ( $78^{\circ}$ F.). Temp. $77^{\circ} 4$ F. dry, $73^{\circ} 8$ F. wet. Sea surface $78^{\circ}$ F.
8.30	Moored ship with both anchors, 45 fms. chain on each, in 10 fms. off the Citadel, Fernando Noronha. Draught { Forward $27' 8''$ . of ship { Aft $28' 4''$ .





AT FERNANDO DE NORONHA.

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LANDING STORES AND LAND-LINE CABLE.

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S.S. "SILVERTOWN."

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AUGUST 3RD TO AUGUST 4TH, 1892.

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## AT FERNANDO NORONHA.

S.S. "SILVERTOWN."

Hour. A.M.	WEDNESDAY, AUGUST 3RD, 1892.
6.10	Mr. H. Benest left for shore in gig, to interview the Director of the Island, and to make all the necessary arrangements as regards native labour, &c., for the landing of cable, cable hut, stores, &c.
6.25	Lowered steam-launch and two lifeboats.
6.40	Cable hands commenced making a raft with the lifeboats for landing cable hut.
7.30	Crew hoisting all station stores for Fernando Noronha from fore hold to upper deck.
7.40	Commenced putting cable hut on raft.
8.0	Light ESE breeze. Fine and clear. Bar. 30.148 (78° F.). Temp. 78° F. dry, 73°·5 F. wet. Sea surface 78°·5 F.
8.15	A number of convict labourers are now at cable landing place.
8.53	Gig returned to ship. Steam-launch left ship to tow a large jangada round from Water Bay to Peak Bay; this jangada is to land cable hut from lifeboats when off cable landing place in Peak Bay.
9.10	Mr. P. Bates left for cable landing place to superintend the landing of cable hut and stores.
9.30	Steam-launch left for cable landing place, in Peak Bay, having in tow the raft (formed with the two lifeboats) containing the whole of Cable Hut "A" and fittings, and sand anchors, spider wheels, some chain, flagstuffs, shovels, and all gear required on the beach for the landing of Shore-End cable. Two cases of windows and doors for the stone cable house already erected at cable landing were also taken. Brown and Healey (carpenters) and 10 cable hands went away on raft.

*At Fernando Noronha.*  
S.S. "SILVERTOWN."

<div> <div>Hour.</div> <div>A.M.</div> </div>	<div> <div>WEDNESDAY, AUGUST 3RD, 1892—<i>contd.</i></div> </div>
10.6	Port surf boat left for shore with 12 cases of station stores, in charge of Mr. Boothby (2nd Officer). Observed jangada landing cable hut, &c., from the raft off cable landing place.
10.30	Since 10 a.m. ran sufficient water into after tank to completely cover cable.
11.20	Port cutter left for shore with a quantity of station stores
NOON.	<p>Light ESE breeze. Fine, bright, and clear. Smooth sea. Bar. 30.135 (79° F.). Temp. 78°·8 F. dry, 73°·5 F. wet. Sea surface 78°·6 F.</p> <p>Temp. in cable tanks: fore tank 78° F., after tank 78° F.</p>
<div> <div>P.M.</div> <div>0.26</div> </div>	Steam-launch returned with lifeboat raft, starboard cutter, and the large jangada in tow from Peak Bay.
0.55	Commenced loading jangada with station stores.
2.0	Jangada, loaded with several cases of station stores, left in tow of steam-launch for Water Bay, Mr. Boothby in charge. Commenced to load raft with remainder of stores.
2.25	Ship visited by Lieut. Lucena (Ajudante) (who is acting as Director in the absence of Señor Don Joaquim de Gusmaõ Coelho, who left for Pernambuco on Saturday last), Major Mello Filho (Commissioner of Prisons), Lieut. Bello (Commanding the troops), Sub.-Lieut. Montenegro, and other visitors, in gig and steam-launch.
3.0	<p>Messrs. J. Schneider and C. R. Pratt left for cable hut.</p> <p>Hoisted up port and starboard cutters.</p>
3.35	Lifeboat raft, with the remainder of station stores and the cases of provisions shipped at Pernambuco for the S.A.C. Co.'s staff, left in tow of steam-launch for Water Bay.
6.50	<p>Hoisted up lifeboats and ceased work for the day.</p> <p>NOTE.—To-day the cable hut, Shore-End landing gear, and electrical stores for cable hut have been landed at cable landing place in Peak Bay, and carried up to the site for cable hut alongside the stone two-roomed cable house (erected here by the artizans on the island in January last). 50 convicts assisted in the work at the cable house. Some work has been done by the carpenters in fixing up testing tables, etc., in cable house. The labourers have opened up the main portion of trench for Shore-End cables from cable</p>

*At Fernando Noronha.*  
S.S. "SILVERTOWN."

Hour.  
P.M.

WEDNESDAY, AUGUST 3RD, 1892—*contd.*

house to beach (depth of trench 3' 6'') and levelled off the ground alongside cable house ready for cable hut to be erected. The distance from cable house to high water mark is 243 feet. In Water Bay all the stores, furniture, and provisions for the telegraph station have been landed and carried up to the station.

7.30 All boats hoisted up except steam-launch.

8.0 Moderate E'ly breeze. Fine, but cloudy.  
Bar. 30·130 (78° F.). Temp. 78° F. dry, 72°·8 F. wet. Sea surface 78°·2 F.

10.0 Tests taken on all cable in fore tank this evening by Mr. W. Bent; results satisfactory.

MIDNT. Heavy squall of wind from E'd. Fine, but cloudy.

THURSDAY, AUGUST 4TH, 1892.

A.M.

6.0 Dull, overcast, and rainy weather.

Crew commenced hoisting the drums of land-line cable for Fernando Noronha up from fore hold to main deck, 5 drums in all, each containing 0·5 n.m. of Type 2177.

7.21 Steam-launch and surf boat left for shore with 10 cable hands, Brown and Healey (carpenters), and Thompson (ship's carpenter's mate).

7.47 Steam-launch returned to ship.

7.50 Messrs. Anstruther, West, Pratt, and Isley, of the South American Cable Company's staff, left for shore.

8.0 Moderate SE breeze. Overcast, with continual rain.  
Bar. 30·125 (75° F.). Temp. 75° F. dry, 72°·8 F. wet. Sea surface 77°·5 F.

Temp. in cable tanks: fore tank 78° F., after tank 78½° F.

9.13 Mr. J. Schneider with the two jointers and sundry electrical instruments left for cable house in Peak Bay.

9.20 Commenced loading jangada with the drums of land-line cable.

9.45 Steam-launch towed the jangada, containing two drums of land-line cable to Peak Bay.

*At Fernando Noronha.*  
S.S. "SILVERTOWN."

Hour.	THURSDAY, AUGUST 4TH, 1892— <i>contd.</i>
A.M.	
10.45	Steam-launch returned with jangada in tow.
11.10	Jangada containing the three remaining drums of land-line cable left in tow of steam-launch for Peak Bay.
11.15	Temp. in fore and after cable tanks=79° F. During this morning tests have been taken on all cable in fore tank, and on the indiarubber core cable in after tank, by Mr. W. Bent; results satisfactory.
NOON.	Light S'y breeze. Fine, but overcast. Bar. 30·127 (76° F.). Temp. 77°·3 F. dry, 74°·6 F. wet. Sea surface 78°·2 F.
P.M.	
2.10	Steam-launch left for shore with jangada in tow.
4.25	Messrs. Anstruther, West, Pratt, and Isley, with their baggage and personal effects, left for shore.
4.56	Mr. Benest left for shore, to settle accounts with the Director for labour supplied. NOTE.—The convict labourers have to-day finished opening out trench from cable house to high water mark ready for southern Shore-End when landed. Fifty labourers were engaged in this work. They also dug a hole, between the cable house and beach, 3 ft. in depth, in which the five drums of land-line cable were buried <i>pro tem</i> . This hole is about 128 ft. from the cable house, and to the left of it, looking from the beach. Mr. Schneider, with jointers, has fixed up the testing apparatus, &c., in the stone cable house ready for use. The iron cable hut is only partially erected, but will be completed to-morrow.
6.35	Hoisted up steam-launch.
8.0	Moderate SE breeze. Fine, but cloudy and hazy. Bar. 30·120 (79° F.). Temp. 78°·3 F. dry, 74° F. wet. Sea surface 78° F.
9.25	Hoisted up gig and prepared for putting to sea to-morrow to take soundings.

SOUNDING OFF FERNANDO NORONHA.

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S.S. "SILVERTOWN."

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AUGUST 5TH TO AUGUST 6TH, 1892.

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# SOUNDING OFF FERNANDO NORONHA.

S.S. "SILVERTOWN."

Hour.  
A.M.

FRIDAY, AUGUST 5TH, 1892.

4.0	Strong ESE wind, and squally. Fine, but cloudy.
5.47	Healey and Brown (carpenters) and Buckmaster and Campbell (cable hands) left in port surf boat for shore to finish the erection of cable hut. Commenced to weigh anchors.
6.20	Anchors up. Set on slow to seawards.
6.30	Surf boat returned. Hoisted boat up, and set on for position to take soundings to the N'd and W'd.
7.29	Sounding { Lat. 3° 48'·0 S } 497 fms. f. w. s. 106 S { Long. 32° 27'·8 W } Fernando Noronha Peak, bearing S 47° E, 3·1 N.M. distant.
8.0	Moderate ESE wind. Fine, but cloudy. Bar. 30·150 (79° F.). Temp. 77°·3 F. dry, 72°·3 F. wet. Sea surface 78°·3 F.
8.9	Sounding { Lat. 3° 47'·2 S } 781 fms. crl. and brk. sh. 107 S { Long. 32° 28'·8 W } Peak bearing S 47° E, 4·5 N.M. distant.
8.55	Sounding { Lat. 3° 46'·3 S } 1203 fms. n. sn. h. 108 S { Long. 32° 30'·1 W } Peak bearing S 49° E, 6 N.M. distant.
9.30	Temp. in cable tanks : fore tank 78½° F., main tank 78° F., after tank 79° F.
9.51	Sounding { Lat. 3° 46'·5 S } 1290 fms. f. s. 109 S { Long. 32° 32'·1 W } Peak bearing S 60° E, 7·6 N.M. distant.

*Sounding off Fernando Noronha.*

S.S. "SILVERTOWN."

Hour.	FRIDAY, AUGUST 5TH, 1892— <i>contd.</i>	
A.M.		
10.57	Sounding { Lat. 3° 46'·9 S 110 S { Long. 32° 34'·1 W } 1388 fms. s. and glob. oz. Peak bearing S 69° E, 9·2 N.M. distant.	
NOON.	Moderate ESE breeze. Fine and clear. Moderate SE sea. Bar. 30·140 (80° F.). Temp. 80° F. dry, 74°·5 F. wet. Sea surface 78°·6 F. Position by { Lat. 3° 48'·7 S. bearings { Long. 32° 36'·6 W.	
P.M.		
0.6	Sounding { Lat. 3° 48'·7 S 111 S { Long. 32° 36'·6 W } 1266 fms. n. sn. Peak bearing S 82° E, 11·2 N.M. distant.	
1.10	Sounding { Lat. 3° 50'·7 S 112 S { Long. 32° 39'·3 W } 772 fms. st. Peak bearing N 88° E, 13·8 N.M. distant.	
1.50	Sounding { Lat. 3° 52'·1 S 113 S { Long. 32° 39'·6 W } 505 fms. h. Peak bearing N 83° E, 14·1 N.M. distant.	
2.22	Sounding { Lat. 3° 53'·5 S 114 S { Long. 32° 39'·4 W } 313 fms. h. Peak bearing N 77° E, 14·2 N.M. distant.	
3.27	Sounding { Lat. 3° 52'·1 S 115 S { Long. 32° 42'·5 W } 1358 fms. f. w. s. Peak bearing N 84° E, 17·0 N.M. distant.	
6 24	Sounding { Lat. 3° 54'·6 S 116 S { Long. 32° 32'·7 W } 849 fms. s. and gl. oz. Peak bearing N 58½° E, 8·2 N.M. distant.	
7.11	Sounding { Lat. 3° 52'·6 S 117 S { Long. 32° 30'·9 W } 483 fms. Lost tube. Peak bearing N 65° E, 5·9 N.M. distant.	
7 47	Sounding { Lat. 3° 51'·4 S 118 S { Long. 32° 30'·2 W } 180 fms. grl. Peak bearing N 74½° E, 4·8 N.M. distant.	
8.0	Fresh SE by E wind. Fine, but cloudy and misty. Moderate sea from ESE. Bar. 30·125 (78 F.). Temp. 78°·4 F. dry, 74° F. wet. Sea surface 78° F.	

*Sounding off Fernando Noronha.*

S.S. "SILVERTOWN."

HOURL.  
P.M.

FRIDAY, AUGUST 5TH, 1892—*contd.*

- 8.27 Sounding { Lat.  $3^{\circ} 50' \cdot 8$  S } 325 fms. s.  
119 S { Long.  $32^{\circ} 29' \cdot 4$  W }  
Peak bearing N  $80^{\circ}$  E,  $3 \cdot 9$  N.M. distant.
- 8.58 Sounding { Lat.  $3^{\circ} 50' \cdot 1$  S } 313 fms. n. sn.  
120 S { Long.  $32^{\circ} 28' \cdot 5$  W }  
Peak bearing E,  $3 \cdot 0$  N.M. distant.
- 9.23 Sounding { Lat.  $3^{\circ} 49' \cdot 7$  S } 127 fms. s.  
121 S { Long.  $32^{\circ} 27' \cdot 6$  W }  
Peak bearing S  $78^{\circ}$  E,  $2 \cdot 1$  N.M. distant.
- 9.28 Set on for anchorage in Water Bay.
- 10.0 Off Shore-End landing place in Peak Bay. Lowered surf boat, which left to fetch carpenters from cable hut.
- 10.27 Let go port anchor in  $11\frac{1}{2}$  fms. of water.
- 10.30 Carpenters and cable hands returned to ship, and reported that cable hut is quite finished and ready for use.

MIDNT.

Moderate SE by E wind, and squally.

During this evening tests have been taken on the spliced pieces of Shore-End, Heavy Intermediate, Light Intermediate, and Heavy Deep Sea (indiarubber core), cable in after tank, with satisfactory results, and the end of the Shore-End sealed ready for landing at Fernando Noronha for the Fernando Noronha—Pernambuco Section.

SATURDAY, AUGUST 6TH, 1892.

A.M.

- 4.0 Moderate ESE breeze. Overcast and squally, with rain at times.
- 5.10 Weighed anchor and set on to take soundings.
- 8.0 Moderate E by S wind. Fine and clear. Moderate sea from ESE.  
Bar.  $30 \cdot 215$  ( $78^{\circ}$  F.). Temp.  $78^{\circ} \cdot 3$  F. dry,  $73^{\circ} \cdot 4$  F. wet.  
Sea surface  $78^{\circ} \cdot 5$  F.
- 8.11 Sounding { Lat.  $3^{\circ} 48' \cdot 1$  S } 1620 fms. c. s.  
122 S { Long.  $32^{\circ} 39' \cdot 5$  W }  
Peak bearing S  $80\frac{1}{2}^{\circ}$  E,  $14 \cdot 2$  N.M. distant.

*Sounding off Fernando Noronha.*

S.S. "SILVERTOWN."

Hour.	SATURDAY, AUGUST 6TH, 1892— <i>contd.</i>	
A.M. 9.13	Sounding { Lat. $3^{\circ} 49'.5$ S 123 S { Long. $32^{\circ} 41'.7$ W } $\frac{.}{1390}$ fms.	{ Wire parted at splice. Lost 1156 fms. of wire and a tube.
	Peak bearing S $87^{\circ}$ E, 16.2 N.M. distant.	
10.40	Sounding { Lat. $3^{\circ} 55'.1$ S 124 S { Long. $32^{\circ} 42'.6$ W } 1326 fms.	c. w. s. and sh.
	Peak bearing N $74\frac{1}{2}^{\circ}$ E, 17.8 N.M. distant.	
11.53	Sounding { Lat. $3^{\circ} 58'.5$ S 125 S { Long. $32^{\circ} 42'.9$ W } 1736 fms.	{ Lost 1512 fms. of wire and tube, wire drew at splice.
	Peak bearing N $65^{\circ}$ E, 19.3 N.M. distant.	
NOON.	Moderate SE by E wind. Fine and clear. Moderate sea from ESE.	
	Bar. 30.205 (79° F.). Temp. 78°.3 F. dry, 73°.5 F. wet. Sea surface 78°-6 F.	
P.M. 0.53	Sounding { Lat. $3^{\circ} 57'.1$ S 126 S { Long. $32^{\circ} 41'.5$ W } 1462 fms.	h.
	Peak bearing N $67^{\circ}$ E, 17.2 N.M. distant.	
1.5	Set on for anchorage off Cable House in Peak Bay.	

LAYING THE FERNANDO NORONHA—  
PERNAMBUCO SECTION.

LANDING THE FERNANDO NORONHA  
SHORE-END.

BUOYING THE HEAVY DEEP SEA.

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S.S. "SILVERTOWN."

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AUGUST 6TH TO AUGUST 7TH, 1892.

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# LAYING THE FERNANDO NORONHA— PERNAMBUCO SECTION.

S.S. "SILVERTOWN."

Hour. P.M.	Landing the Fernando Noronha Shore-End.
	SATURDAY, AUGUST 6TH, 1892.
4.16	Let go port anchor in $7\frac{1}{2}$ fathoms off Cable Hut in Peak Bay. Let go starboard anchor. Draught of ship $\left\{ \begin{array}{l} \text{Forward } 27' 6'' \\ \text{Aft } 28' 6'' \end{array} \right.$
4.25	Mr. P. Bates with 11 cable hands left in surf boat to fix spider wheels in position on beach ready for landing Shore-End to-morrow morning.
4.39	Lowered starboard surf boat and commenced coiling 4 coils of $4\frac{1}{2}$ " rope in it, ready for hauling lines to-morrow.
5.0	Lowered steam-launch.
5.15	Finished coiling $4\frac{1}{2}$ " rope in starboard surf boat and made boat fast to boom for the night.
5.35	Mr. Bates and the 11 cable hands returned to ship in port surf boat, having placed spider wheels in position on beach 60 fathoms apart.
5.42	J. Doyle, of the South American Cable Company's Staff, and who will act as signalman on this island, left ship.
7.0	Cable hands coiled 4 coils of 4" rope in port surf boat ready for hauling lines to-morrow, and made boat fast to the boom for the night.
7.23	Capt. Thomson and Mr. B. C. Combe (Navigating Officer) left for shore to take sights for time.
8.0	Light SSE breeze. Fine and clear. Bar. 30.135 (78° F.). Temp. 77°·3 F. dry, 72°·8 F. wet. Sea surface 78°·1 F.

*Laying the Fernando Noronha—Pernambuco Section.*

S.S. "SILVERTOWN."

Hour.	Landing the Fernando Noronha Shore-End— <i>contd.</i>
	SUNDAY, AUGUST 7TH, 1892.
A.M.	
4.0	Moderate ESE breeze with frequent strong gusts. Smooth sea.
5.30	Cable hands turned to and set about getting everything ready for landing Shore-End.
5.44	Messrs. P. Bates, W. A. Purdom, and P. C. Willmott-Dixon, with jointer Gowing and six cable hands, left for Cable Hut. Mr. Dixon remains at Fernando Noronha in charge of Cable End till ship returns from Pernambuco.
6.25	Hauled top end of Shore-End cable, No. 2146, pt. Sec. "3" (indiarubber core), out of after tank and three times round paying-out drum to stern sheaves.
6.30	Pumped sufficient water out of after tank to leave the cable now about to be laid free of water. Steam-launch left for the beach with both surf boats, containing ropes to form endless messenger between ship and beach.
6.38	Observed starboard surf boat land end of $4\frac{1}{2}$ " rope on beach and make for ship, in tow of steam-launch, paying out rope. A number of convict labourers now on beach digging out cable trench.
6.45	Observed end of 4" rope from port surf boat landed on beach. Starboard surf boat arrived at stern of ship paying out $4\frac{1}{2}$ " rope from beach. Took end of the third coil of $4\frac{1}{2}$ " rope in-board over stern sheave and made it fast to end of Shore-End cable on stern baulks.
6.47	Steam-launch with port surf boat in tow returning to ship. Surf boat paying out 4" rope from beach.
6.55	Port surf boat arrived at ship's bow paying out 4" rope from beach. Took end of the third coil of 4" rope from surf boat over port bow sheave to port picking-up drum.
6.56	Endless messenger between ship and shore now complete and "All ready" signal hoisted on beach.
7.0	Commenced heaving in on messenger with port picking-up drum.



S.S. "SILVERTOWN."

Hour.  
A.M.

Landing the Fernando Noronha Shore-End—*contd.*

SUNDAY, AUGUST 7TH, 1892—*contd.*

- 7.10 Mr. Benest left for cable landing place.  
Position of { Lat.  $3^{\circ} 50' 0''$  S.  
Cable House { Long.  $32^{\circ} 25' 2''$  W.  
The position of Cable House is fixed by triangulation from Peak and ship's mainmast. The Cable House bears from Peak N  $61\frac{1}{4}^{\circ}$  E; 378 fms. distant.
- 7.13 End of Shore-End cable, No. 2146, pt. Sec. "3," from after tank passed over stern sheave with 1st balloon buoy attached.
- 7.25 Capt. Thomson and Mr. E. March Webb left for cable landing place.
- 7.38 1st balloon buoy on end of Shore-End on beach; 21 balloon buoys out.  
0.302 N.M. of Shore-End cable paid out from ship to beach.  
Position of ship { Peak bearing S  $14\frac{1}{2}^{\circ}$  W.  
Cable House bearing S  $44\frac{1}{2}^{\circ}$  E.  
{ Lat.  $3^{\circ} 49' 75''$  S.  
Long.  $32^{\circ} 25' 35''$  W.  
Distance by chart from ship to beach = 0.32 N.M.
- 7.45 Shore signalled, "Enough cable on shore." Twenty-five balloon buoys out. Stopped paying out cable and heaving in on messenger.  
Shore-End Cable, No. 2146, part Sec. "3,"  
paid out .. .. . = 0.371 N.M.  
Length paid out between ship and beach .. = 0.302 "  
  
Length between Cable House and Low Water  
Mark.. .. . = 0.069 N.M.
- 7.50 Shore signalled, "Do not cast off balloons yet. Will give orders."
- 7.53 Signalled to shore, "Dixon. Current off. Connect to Morse when you get end."
- 8.0 Moderate ESE breeze. Fine, bright, and clear. Smooth sea.  
Bar. 30.230 (78° F.). Temp. 77° 8 F. dry, 72° 3 F. wet. Sea surface 78° 3 F.  
Shore signalled, "Take off balloons."

S.S. "SILVERTOWN."

Hour. A.M.	Landing the Fernando Noronha Shore-End— <i>contd.</i>
	SUNDAY, AUGUST 7TH, 1892— <i>contd.</i>
8.5	Native labourers burying cable on beach. Surf boats left ship to take buoys off cable.
8.18	Shore signalled, "Heave in on rope." Resumed heaving in on messenger with port picking-up drum.
8.35	End of messenger ( $4\frac{1}{2}$ " rope) came in-board over port bow sheave with six balloons attached.
8.37	Steam-launch and surf boats brought the remainder of balloon buoys (19) back to ship.
8.49	Mr. R. E. Peake left ship for cable landing place.
9.10	Mr. Benest and Capt. Thomson returned to ship, accompanied by Lieut. Lucena (Assistant Director), Major Mello Filho, Lieut. Bello, and staff.
	Laying the Fernando Noronha Shore-End.
9.25	Signalled to shore, "Signal when you want boat." Shore replied: "O.K."
9.30	Ship spoke shore on Morse.
9.40	Shore signalled, "Send boat for gear and hands." Replied "O.K."
	Steam-launch hoisted up.
9.44	Surf boat left for the beach.
9.55	Hoisted up port surf boat.
10.0	Mr. P. Bates and the six cable hands returned from shore in starboard surf boat.
	NOTE.—The cable on the beach has been led up into the cable house and well buried on the beach. 7 fms. (=0.007 N.M.) were cut off the end of the cable at the hut, as there was that length too much on the beach. All gear left on beach.
	Shore-End, No. 2146 pt. Sec.
	"3," paid out .. .. =0.371 N.M.
	Cut off on beach .. .. =0.007 ,, = 0.364 N.M.
	Length between Hut and Low Water Mark = 0.062 ,,
	,, ,, Ship ,, ,, ,, = 0.302 N.M.
10.5	Hoisted up starboard surf boat.

Hour.  
A.M.

Laying the Fernando Noronha Shore-End—*contd.*

SUNDAY, AUGUST 7TH, 1892—*contd.*

- 10.7 Mr. Benest with the Assistant Director and other visitors left for cable landing place.  
**T.** Temp. of bottom water at anchorage =  $77^{\circ}.7$  F.,  $6\frac{3}{4}$  fms. (now low water).
- 10.20 Messrs. Benest, Webb, Peake, and Purdom with jointer Gowing returned to ship.
- 10.25 Commenced to heave up anchors. Hoisted gig up, and made all ready to start paying out cable from after tank.
- 10.26 Eased out a few fathoms of cable according to strain.
- 10.35 Commenced picking up on cable as ship moves up to anchors and cable slackens.
- 10.40 Starboard anchor clear of the bottom.
- 10.45 Commenced to pay out cable. Weight on brake levers = 1384 lbs. (20 weights).  
Bower anchor chains crossed.
- 10.55 Paying out on cable according to strain. Clearing anchors.
- 11.5 Starboard anchor up and bower chains now clear. Picking up and paying out cable as necessary.
- 11.25 Port anchor off bottom.
- 11.28 Set jib to cant ship's head seawards.
- 11.32 Put engine of paying-out machine out of gear and lifted brakes right up.
- 11.40 Cable commenced running out. Small cork buoy let go on cable to mark anchorage.
- 11.41 Set on "dead slow" ahead.
- 11.43 Stopped ship's engines. Much difficulty in getting ship to pay off.
- 11.46 Set on again. Engines half speed. Jib set, helm hard-a-starboard. Ship now slowly coming round to her course and making a long sweep with the cable.

*Laying the Fernando Noronha—Pernambuco Section.*

S S. "SILVERTOWN."

Hour. A.M.	Laying Fernando Noronha Shore-End— <i>contd.</i>
	SUNDAY, AUGUST 7TH, 1892— <i>contd.</i>
11.50	Stopped ship's engines.
11.52	Checked cable with brakes while ship's head was coming round.
11.53	SHIP ON COURSE N $53\frac{1}{2}^{\circ}$ W. Shore-End paid out 0.807 N.M. Cut off on beach 0.007 N.M. <div style="text-align: right;"> <hr style="width: 10%; margin-left: auto;"/>                 .. .. = 0.800 N.M.                  Laid between anchorage and Hut .. .. = 0.364 "                  Length paid out on curve while getting                      ship on Course .. .. = 0.436 N.M.                  Position { Lat. <math>3^{\circ} 49' 28''</math> S } Peak bearing S <math>2^{\circ}</math> W, 0.88                            { Long. <math>32^{\circ} 25' 4''</math> W } N.M. distant.             </div>
11.55	Let go a mark-buoy, No. 71, moored with 25 fms. $\frac{1}{4}''$ chain and a 1 cwt. 2 qrs. 4 lbs. mushroom, in 18 fms. of water. Set on slow ahead.
NOON.	Moderate SSE wind. Fine and clear. Smooth sea. Bar. 30.225 (80° F.). Temp. 80° 6 F. dry, 73° 3 F. wet. Sea surface 78° F.
	<b>Laying Fernando Noronha Heavy Intermediate.</b>
P.M. 0.10	SPLICE BETWEEN SHORE-END CABLE, No. 2146, PT. SEC. "3," AND HEAVY INTERMEDIATE CABLE, No. 2145, PT. SEC. "4A," FROM AFTER TANK PASSED OFF DRUM. Shore-End, No. 2146, pt. Sec. "3," paid out by Drum measurement .. .. = 1.525 N.M. Shore-End, No. 2146, pt. Sec. "3," paid out by Factory measurement .. .. = 1.500 " <div style="text-align: right;"> <hr style="width: 10%; margin-left: auto;"/>                 Difference .. .. = 0.025 N.M.                  Laid by Factory measurement .. .. = 1.500 N.M.                  Cur off on beach .. .. = 0.007 " <div style="text-align: right;"> <hr style="width: 10%; margin-left: auto;"/> </div>                 TOTAL CABLE LAID FROM CABLE HOUSE .. = 1.493 N.M.             </div>

S.S. "SILVERTOWN."

HOURL. Laying Fernando Noronha Heavy Intermediate  
P.M. —contd.

SUNDAY, AUGUST 7TH, 1892—contd.

Position { Cable House bearing S  $41\frac{1}{2}^{\circ}$  E.  
of splice { Peak bearing S  $25\frac{1}{2}^{\circ}$  E, 1.32 N.M. distant.  
{ Lat.  $3^{\circ} 49' 0$  S.  
{ Long.  $32^{\circ} 26' 05$  W.  
Depth of water=26 fms.

0.15 Ship's engines=22 revs. per min. Drum=23 revs. per min.=4 KTS. Weight on brake levers=1384 lbs. Dynamometer=10 cwt.

Laying Fernando Noronha Light Intermediate.

0.25 SPLICE BETWEEN HEAVY INTERMEDIATE, No. 2145, PT. SEC. "4A," AND LIGHT INTERMEDIATE, No. 2144, PT. SEC. "2A," FROM AFTER TANK PASSED OFF DRUM.  
Heavy Intermediate, No. 2145, pt. Sec.  
"4A," paid out by Drum measurement .. = 1.002 N.M.  
Heavy Intermediate, No. 2145, pt. Sec.  
"4A," paid out by Factory measurement = 0.990 ,,

Difference .. .. = 0.012 N.M.

TOTAL CABLE LAID FROM CABLE HOUSE=2.483 N.M.

Position { Cable House bearing S  $50^{\circ}$  E.  
of splice { Peak bearing S  $41\frac{1}{4}^{\circ}$  E, 2.15 N.M. distant.  
{ Lat.  $3^{\circ} 48' 55$  S.  
{ Long.  $32^{\circ} 26' 90$  W.

Depth of water=200 fms.

CHANGED COURSE TO N  $52^{\circ}$  W.

CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, N  $53\frac{1}{2}^{\circ}$  W (MADE GOOD N  $63^{\circ}$  W)=1.683 N.M.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N  $53\frac{1}{2}^{\circ}$  W (MADE GOOD N  $63^{\circ}$  W)=1.630 N.M.

SLACK= $3.2^{\circ}/_{0}$ .

0.36 Ship's engines=19 revs. per min. Drum=22 revs. per min.=3.8 KTS. Dynamometer=16 cwt.

0.47 Ship's engines=17 revs. per min. Drum=33 revs. per min.=5.8 KTS.

*Laying the Fernando Noronha—Pernambuco Section.*

S.S. "SILVERTOWN."

Hour.  
P.M.

**Laying Fernando Noronha Heavy Deep Sea.**

SUNDAY, AUGUST 7TH, 1892—*contd.*

- 0.48 SPLICE BETWEEN LIGHT INTERMEDIATE, No. 2144, PT. SEC. "2A," AND HEAVY DEEP SEA, No. 2143, PT. SEC. "2," FROM AFTER TANK PASSED OFF DRUM.  
 Light Intermediate, No. 2144, pt. Sec. "2 A,"  
 paid out by Drum measurement.. .. = 1.489 N.M.  
 Light Intermediate, No. 2144, pt. Sec. "2 A,"  
 paid out by Factory measurement .. .. = 1.490 "  
 Difference .. .. = 0.001 N.M.

TOTAL CABLE LAID FROM CABLE HOUSE=3.973 N.M.

Position { Peak bearing S 48° E, 3.35 N.M. distant.  
 { Lat. 3° 47'.95 S.  
 { Long. 32° 27'.92 W.

Depth of water=500 fms.

- 0.54 Stopped ship's engines. About to cut and buoy cable.  
 1.0 Moving ship's engines as required. Increased weight on brake levers to 1908 lbs.=28 weights.  
 1.5 Ship's engines working at about half speed astern. Cable running out according to strain, which varies from 12 cwt. to 30 cwt. Wind, from SSE, right aft, fresh.  
 1.9 Sounding { Lat. 3° 47'.55 S } 600 fms. f. w. s.  
 127 S { Long. 32° 28'.65 W }  
 Peak bearing S 50½° E, 4.1 N.M. distant.

**Buoyming Fernando Noronha Heavy Deep Sea.**

- 1.13 Bent stoppers and slip rope on cable on stern baulks. Cable now leading up and down nearly. Engines still going astern.  
 1.18 Bent mooring chain of buoy on cable on stern baulks and cut cable three revolutions abaft drum. 1.305 N.M. of Heavy Deep Sea cable, No. 2143, pt. Sec. "2," from after tank paid out.

CABLE BY FACTORY MEASUREMENT, LAID FROM FERNANDO NORONHA CABLE HOUSE TO THIS BUOY:—

SHORE-END,	No. 2146, PT. SEC. "3"	= 1.493 N.M.
HEAVY INT.,	No. 2145, "	"4A" = 0.990 "
LIGHT INT.,	No. 2144, "	"2A" = 1.490 "
HEAVY DEEP SEA,	No. 2143, "	"2" = 1.305 "

TOTAL 5.278 N.M.









STEAMING TO PERNAMBUCO.

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AT PERNAMBUCO.

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S.S. "SILVERTOWN."

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AUGUST 7TH TO AUGUST 8TH, 1892.

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# STEAMING TO PERNAMBUCO.

S.S. "SILVERTOWN."

HOUR. P.M.	Steaming from Fernando Noronha to Pernambuco, and Arrival at Pernambuco.
SUNDAY, AUGUST 7TH, 1892— <i>contd.</i>	
2.45	Set on full speed for Pernambuco. Peak bearing S 54° E. 4.10 N.M. distant by vertical angle.
8.0	Moderate SE breeze. Fine and clear. Moderate sea from SE. Bar. 30.175 (78° F.). Temp. 81°·6 F. dry, 74° F. wet. Sea surface 77°·5 F.
MONDAY, AUGUST 8TH, 1892.	
A.M. 8.0	Fresh E'ly wind. Squally and cloudy, with rain. Moderate beam sea. Bar. 30.175 (76° F.). Temp. 75°·5 F. dry, 74° F. wet. Sea surface 78° F.
NOON.	Moderate SE wind. Fine, but cloudy. Bar. 30.196 (80° F.). Temp. 79°·3 F. dry, 73°·5 F. wet. Sea surface 78°·8 F. Position by { Lat. 5° 58'·2 S. observations { Long. 33° 21'·2 W. Current observed since 2.45 p.m. yesterday=S 70° W, 8.5 N.M.=0.4 KT. Distance run since 2.45 p.m. yesterday=137 N.M.
P.M. 6.20	Position { Lat. 6° 34'·5 S. by stars { Long. 33° 36'·3 W. Current observed since noon=N 58° W, 3.3 N.M.=0.5 KT.

*Steaming to Pernambuco.*

S.S. "SILVERTOWN."

Steaming from Fernando Noronha to Pernambuco, and Arrival at Pernambuco— <i>contd.</i>	
MONDAY, AUGUST 8TH, 1892— <i>contd.</i>	
8.0	Moderate steady breeze from SSE. Fine clear weather. Moderate sea and swell from SE. Bar. 30.140 (78° F.). Temp. 79°·5 F. dry, 72°·6 F. wet. Sea surface 78°·5 F.
8.6	Sounding { Lat. 6° 41'·2 S. 128 S { Long. 33° 38'·2 W. } 2387 fms. gl. oz.
10.19	Sounding { Lat. 6° 48'·6 S. 129 S { Long. 33° 40'·8 W. } 1420 fms. h.
MIDNT.	Moderate SSE wind. Fine clear weather. Moderate decreasing sea.
TUESDAY, AUGUST 9TH, 1892.	
A.M. 0.18	Sounding { Lat. 6° 55'·4 S. 130 S { Long. 33° 45'·2 W. } 2204 fms. Lost tube.
3.0	Sounding { Lat. 7° 2'·3 S. 131 S { Long. 33° 49'·3 W. } 2326 fms. Lost 1047 fms. of wire and tube.
4.0	Moderate SSE breeze. Fine and clear. Squally at times.
5.53	Position { Lat. 7° 13'·4 S. by stars { Long. 33° 59'·9 W. Current observed since 6.20 p.m. yesterday = N 61° W, 3·7 N.M. = 0·3 KT.
8.0	Moderate SSE breeze. Fine and clear. Bar. 30.185 (79° F.). Temp. 76°·5 F. dry, 70° F. wet. Sea surface 78° F.
9.30	Position by { Lat. 7° 33'·0 S. observations { Long. 34° 16'·8 W. Current observed since 5.53 a.m. = S 73° W, 2·7 N.M. = 0·8 KT. Temp. in cable tanks: fore tank 79° F., main tank 78½° F., after tank 79½° F.
NOON	Moderate SSE breeze. Fine and clear. Smooth sea with slight swell. Bar. 30.230 (80° F.). Temp. 79°·8 F. dry, 70°·5 F. wet. Sea surface 77°·8 F.

*Steaming to Pernambuco.*

S.S. "SILVERTOWN."

HOUR. NOON.	Steaming from Fernando Noronha to Pernambuco, and Arrival at Pernambuco— <i>contd.</i>
<div>TUESDAY, AUGUST 9TH, 1892—<i>contd.</i></div> <div>                     Position by { Lat. 7° 45'·6 S.                      observations { Long. 34° 28'·6 W.                      Difference or set since 9.30 a.m.=N 29° W, 2·1 N.M.                      Distance run since noon yesterday=128 N.M.                 </div>	
P.M.	
0.15	Sighted land on starboard bow.
4.45	Olinda abeam.
5.0	Moored ship with both anchors in 7 fms. of water off the Reef Lighthouse at Pernambuco.
5.6	Messrs. R. K. Gray (recently arrived from England), E. W. Parsoné, and J. G. Keiller, of Messrs. Wilson, Sons, & Co., came on board.
<div>At Pernambuco.</div>	
8.0	Light SE breeze. Fine, but cloudy. Slight SE'ly swell in the roadstead. Bar. 30·190 (76° F.). Temp. 75°·8 F. dry, 70° F. wet. Sea surface 76° F.
10.0	Tests taken on all cable in fore tank this evening with satisfactory results.



LAYING THE PERNAMBUCO—FERNANDO  
NORONHA SECTION.

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PAYING OUT FROM PERNAMBUCO.

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SLIPPING FINAL BIGHT OFF  
FERNANDO.

---

S.S. "SILVERTOWN."

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AUGUST 10TH TO AUGUST 14TH, 1892.





# LAYING THE PERNAMBUCO—FERNANDO NORONHA SECTION.

S.S. "SILVERTOWN."

HOOR.  
A.M.

## Splicing on to Pernambuco Shore-End.

WEDNESDAY, AUGUST 10TH, 1892.

- 4.0      Moderate WSW breeze.    Fine, but cloudy, with heavy dew.
- 5.45      Weighed anchors and set on for Buoy 50 (blue flag) on end of the 4 N.M. of Shore-End cable laid out by the lighter "Ypiranga" on the 29th July.
- 6.9        Hauled top end of cable (Shore-End Type, No. 2146, pt. Sec. "3") from fore tank along leads on main deck, and three times round paying-out drum to quarter deck.
- 6.25      Commenced to open out the end of the Shore-End cable, ready for splice with Pernambuco Shore-End.
- 6.30      Took turns of cable off paying-out drum, and ran a rope three times round drum ready for picking up Pernambuco End over stern sheave.
- 6.45      End of Shore-end cable from fore tank opened out ready for splice with Pernambuco End. 8 fms.=0.008 N.M. cut off fore tank end for this splice, making the length of Shore-End cable, No. 2146, pt. Sec. "3," in fore tank and now about to be spliced to Pernambuco End=2.992 N.M.
- 6.49      Let go starboard anchor a little to seawards of Buoy 50 on Pernambuco End of cable.
- 6.52      Lowered surf boat, and sent it away to Buoy 50.
- 7.13      Passed rope from paying-out drum over stern sheave to boat at Buoy 50 on starboard quarter.
- 7.15      Drum rope shackled on to moorings of buoy.    Commenced to heave in on rope with paying-out machine.

S.S. "SILVERTOWN."

<p>Hour. A.M.</p>	<p>Splicing on to Pernambuco Shore-End—<i>contd.</i></p>
	<p>WEDNESDAY, AUGUST 10TH, 1892—<i>contd.</i></p>
<p>7.16</p>	<p>Ship's stern swinging to seawards of and away from buoy. Commenced to heave in on bower chain.</p>
<p>7.25</p>	<p>Moving engines and helm as required to bring ship's stern round to buoy, and heaving in on anchor chain as necessary. Paying out and picking up on drum rope according to strain.</p>
<p>7.34</p>	<p>Ship's stern now nearer buoy, ceased heaving in on bower chain, and resumed picking up on drum rope. Buoy now slipped from moorings. 45 fms. of chain on starboard anchor now out.</p>
<p>7.45</p>	<p>Some strain coming on the drum rope; ran the end of it along main deck to starboard picking-up drum, and commenced to heave in with both paying-out and picking-up machines together. Buoy 50 hoisted on board.</p>
<p>7.50</p>	<p>Pernambuco End of cable at stern sheave. Picking up on cable slowly, according to strain.</p>
<p>7.55</p>	<p>Steam-tug brought empty lighter ("Ypiranga") alongside.</p>
<p>8.0</p>	<p>Moderate S'ly breeze. Fine and clear. Slight sea and swell. Bar. 30.220 (74° F.). Temp. 71°·8 F. dry, 69°·3 F. wet. Sea surface 76°·2 F.</p>
<p>8.5</p>	<p>Stopped picking up on Pernambuco End, as enough in-board for splice, and bent on stoppers and slip rope. Temp. in fore cable tank: 79° F.</p>
<p>8.10</p>	<p>Hoisted up surf boat.</p>
<p>8.15</p>	<p>Turns of Pernambuco End taken off drum, set about opening out the end for splice with Shore-End cable, No. 2146, pt. Sec. "3," in fore tank.</p>
<p>8.25</p>	<p>Cut 2 fms.=0.002 N.M. off Pernambuco End for damaged sheathing. Shore-End, No. 2146, pt. Sec. "3," originally laid=4.000 N.M. Cut off for damaged sheathing .. .. =0.002 ..</p>
	<p>Shore-End now remaining laid .. .. =3.998 N.M.</p>

S.S. "SILVERTOWN."

HOUR. A.M.	Splicing on to Pernambuco Shore-End— <i>contd.</i>
WEDNESDAY, AUGUST 10TH, 1892— <i>contd.</i>	
8.37	Lead from testing room attached to Pernambuco End. Spoke Pernambuco Hut and commenced tests on cable.
9.5	Commenced transferring to the lighter "Ypiranga" the 1·685 n.m. of Heavy Deep Sea cable, No. 2143, pt. Sec. "2," left in after tank at 1.18 p.m. on 7th inst. An ordinary transferring winch being used for this work, no check measurement of cable was possible. This cable is to be landed for Pernambuco underground lines.
9.22	Port cutter, in charge of Grimes, leading hand, with a crew of seamen, left to pick up Mark-buoy 51 B, put down near this position on the 27th July last.
9.35	Tests on Pernambuco End satisfactory. Commenced joint between Pernambuco End (Shore-End type, No. 2146, pt. Sec. "3") and cable in fore tank (Shore-End type, No. 2146, pt. Sec. "3").
10.0	<b>T.</b> Temp. of bottom water, 9 fms. depth, in this position = 76.3° F. Surface temp. = 76°·2 F.
10.15	Pumped water out of fore cable tank.
10.20	Messrs. R. K. Gray, E. W. Parsoné, and J. G. Keiller came on board.
10.30	Finished transferring the 1·685 n.m. length of Heavy Deep Sea cable, No. 2143, pt. Sec. "2," from after tank to the lighter "Ypiranga" for Pernambuco land-line.
11.10	Port cutter returned with Buoy 51 and moorings.
11.20	Lighter "Ypiranga" in tow of tug "Amadeo" left for shore.
11.35	Hoisted up all boats that have been in use this morning.
11.45	Messrs. E. W. Parsoné and J. G. Keiller left ship. Mr. R. K. Gray accompanies ship during the laying of this Section.
NOON.	Light S'ly wind. Fine and clear. Smooth sea. Bar. 30·214 (76° F.). Temp. 75°·3 F. dry, 71°·8 F. wet. Sea surface 76°·2 F.
P.M.	Joint between Pernambuco End and cable in fore tank finished. Commenced splice.
1.30	

S.S. "SILVERTOWN."

Hour. P.M.	Splicing on to Pernambuco Shore-End— <i>contd.</i>
	WEDNESDAY, AUGUST 10TH, 1892— <i>contd.</i>
2.50	Splice between Pernambuco End (Shore-End type, No. 2146, pt. Sec. "3") and cable in fore tank (Shore-End type, No. 2146, pt. Sec. "3") completed. Set about preparing to start laying cable from fore tank towards Fernando Noronha. Put 4 turns of cable round paying-out drum.
3.2	Took stoppers off cable on stern baulks and paid out a few fathoms to bring cable nearly up and down, and immersing recently-made joint. Weight on brake levers=1384 lbs. (20 weights).
3.3	Tests on cable unsatisfactory.
3.15	Set about preparing to pick up cable again, to cut the joint out of the splice just made.
3.27	Commenced to pick up cable with paying-out and starboard picking-up engines together.
3.45	Picking up slowly on cable owing to the strain on it.
3.56	Splice between Pernambuco End and fore tank end in-board again. Stopped picking up cable and bent on stoppers.
4.5	Commenced to open out the splice.
4.40	Finished opening up splice and cut out the joint that was made at 1.30 p.m. Lead from testing room attached to Pernambuco End and tests resumed.
5.40	Tests on Pernambuco End and on cable in fore tank satisfactory. The joint found to be faulty.
5.55	Commenced joint between Pernambuco End and the cable in fore tank.
6.57	Joint placed in the curing stove.
8.0	Moderate S'y breeze. Fine and clear. Slight sea and swell. Bar. 30.176 (76° F.). Temp. 76° F. dry, 72°·3 F. wet. Sea surface 76°·5 F.
9.57	Joint between Pernambuco End and cable in fore tank finished.
10.40	Tests on all cable in circuit between ship and shore now satisfactory. Commenced splice.

S.S. "SILVERTOWN."

Hour. P.M.	<b>Splicing on to Pernambuco Shore-End—contd.</b>
	WEDNESDAY, AUGUST 10TH, 1892—contd.
11.20	Inner sheathing of splice laid in, but owing to heavy rain ceased work.
MIDNT.	Moderate S'ly breeze and squally. Cloudy, with rain. Slight sea and swell from the SSE. Bar. 30.200 (74° F.). Temp. 73° F. dry, 71°·6 F. wet. Sea surface 76°·2 F.
	THURSDAY, AUGUST 11TH, 1892.
A.M. 4.0	Similar weather. Bar. 30.150 (74° F.). Temp. 74°·2 F. dry, 72° F. wet. Sea surface 76°·4 F.
8.0	Light SE breeze. Fine, but overcast, with rain at times. Moderate swell. Bar. 30.180 (75° F.). Temp. 74°·8 F. dry, 70°·3 F. wet. Sea surface 77° F. Draught of ship { Forward 27' 0". { Aft 28' 0". Cable hands turned to and resumed making splice between Pernambuco Shore-End and Shore-End cable in fore tank. Temp. in fore cable tank 74°½ F.
	<b>Paying out Pernambuco Shore-End.</b>
8.40	Splice between Pernambuco End (Shore-End type, No. 2146, pt. Sec. "3") and end of cable in fore tank (Shore-End type, No. 2146, pt. Sec. "3") completed. No cable expended for this splice, 3.998 N.M. of Shore-End cable, No. 2146, pt. Sec. "3," laid from Pernambuco Hut to this splice + 345.926 N.M. of all types in fore tank = 349.924 N.M. of cable in circuit between ship and shore.
8.50	Put 4 turns of cable round paying-out drum, and made all ready to start laying cable.
10.54	Commenced to heave up anchor.
11.3	Anchor off bottom. Put engine of paying-out machine out of gear and lifted brakes right up. Weight on brake levers = 1384 lbs (20 weights).
11.6	Set on "easy ahead." Anchor at up bows.
11.11	SPLICE between Pernambuco End and cable in fore tank passed over stern sheave.

S.S. "SILVERTOWN."

Hour.  
A.M.

Paying out Pernambuco Shore-End—*contd.*

THURSDAY, AUGUST 11TH, 1892—*contd.*

Position of splice { Lat.  $8^{\circ} 2' 10''$  S.  
Long.  $34^{\circ} 48' 53''$  W.  
Olinda Lighthouse and E turret of Fort Buraco  
 $38^{\circ} 50'$ .  
Picao Lighthouse and E turret of Fort Buraco  
 $12^{\circ} 20'$ .  
Picao Lighthouse bearing S  $69^{\circ}$  W.

11.13 Cable running out very slowly as strain takes it.  
SHIP ON COURSE N  $67^{\circ}$  E.  
0.054 N.M. of Shore-End cable, No. 2146, pt. Sec. "3," paid out from fore tank + 3.998 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT = 4.052 N.M.

CABLE, BY INDICATOR, PAID OUT ON CURVE IN GETTING SHIP ROUND ON TO COURSE = 0.054 N.M.

DISTANCE, BY CHART, OVERGROUND, ON CURVE IN GETTING SHIP ROUND ON TO COURSE = 0.050 N.M.

Position { Lat.  $8^{\circ} 2' 1''$  S. Olinda Lighthouse bearing  
N  $60\frac{1}{2}^{\circ}$  W.  
Long.  $34^{\circ} 48' 5''$  W. Picao Lighthouse bearing  
S  $69^{\circ}$  W.

11.22 Increased ship's engines to 26 revs. per min.

11.30 " " " 30 " "

11.37 1.000 N.M. of Shore-End, No. 2146, pt. Sec. "3," paid out from fore tank. Patent log = 1.05 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT = 4.998 N.M.

Drum = 22 revs. per min. = 3.9 KTS. Ship's engines = 30 revs. per min.

Position—Olinda Lighthouse bearing N  $75^{\circ}$  W.

11.46 Increased ship's engines to 32 revs. per min.

11.52 2.000 N.M. of Shore-End, No. 2146, pt. Sec. "3" paid out from fore tank. Patent log = 1.93 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT = 5.998 N.M.

Drum = 24 revs. per min. = 4.25 KTS. Ship's engines = 32 revs. per min.

Position—Olinda Lighthouse bearing N  $84^{\circ}$  W.

NOON. Light E by S wind. Overcast and squally, with passing showers of rain. Slight swell from SE.

Bar. 30.200 ( $76^{\circ} 3$  F.). Temp.  $75^{\circ}$  F. dry,  $70^{\circ} 5$  F. wet. Sea surface  $76^{\circ} 5$  F.



S.S. "SILVERTOWN."

Hour.  
P.M.

Paying out Pernambuco Shore-End—*contd.*

THURSDAY, AUGUST 11TH, 1892—*contd.*

2·542 N.M. of Shore-End, No. 2146, pt. Sec. "3," paid out from fore tank. Patent log=2·42 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=6·540 N.M.

Depth=12 fms.

Drum=25 revs. per min.=4·42 KTS. Ship's engines=32 revs. per min. Weight on brake levers=1384 lbs. Strain=12 to 16 cwt. Strophometer=20 to 24 revs.

Olinda Lighthouse bearing N 87° W.

Paying out Pernambuco Heavy Intermediate.

0.6 SPLICE between Shore-End. No. 2146, pt. Sec. "3," and Heavy Intermediate, No. 2145, pt. Sec. "4A," from fore tank passed off drum.

Shore-End, No. 2146, pt. Sec. "3," paid out by

Drum measurement .. .. =2·964 N.M.

Shore-End, No. 2146, pt. Sec. "3," paid out by

Factory measurement .. .. =2·992 "

Difference.. .. = -0·028 N.M.

Patent log=2·83 N.M.

Depth=12 fms.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=6·990 N.M.

Position { Lat. 8° 1'·0 S.  
of splice { Long. 34° 45'·9 W.  
Olinda Lighthouse bearing N 89° W.

0.18 Increased ship's engines to 35 revs. per min.

0.28 1·671 N.M. of Heavy Intermediate, No. 2145, pt. Sec. "4A," paid out from fore tank.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=8·661 N.M.

0.30 1·804 N.M. of Heavy Intermediate, No. 2145, pt. Sec. "4A," paid out from fore tank. Patent log=4·62 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=8·794 N.M.

Depth=16 fms.

Drum=28 revs. per min.=5·0 KTS. Ship's engines=35 revs. per min. Weight on brake levers=1384 lbs. Strain=6 to 10 cwt. Strophometer=20 to 26 revs.

Position { Olinda Lighthouse bearing S 84° W.  
Picao " " S 67½° W.

1.0 4·195 N.M. of Heavy Intermediate, No. 2145, pt. Sec. "4A," paid out from fore tank. Patent log=7·05 N.M.

S.S. "SILVERTOWN."

HOUR. P.M.	Paying out Pernambuco Heavy Intermediate— <i>contd.</i>
	THURSDAY, AUGUST 11TH, 1892— <i>contd.</i>
	TOTAL CABLE LAID FROM PERNAMBUCO HUT=11·185 N.M. Depth=17 fms.
	Drum=28 revs. per min.=5·0 KTS. Ship's engines=35 revs. per min. Weight on brake levers=1384 lbs. Strain=5 to 9 cwt. Strophometer=20 to 27 revs.
	Position { Olinda Lighthouse bearing S 79 $\frac{1}{2}$ ° W. { Picao                   "               "       S 66° W.
1.30	6·630 N.M. of Heavy Intermediate, No. 2145, pt. Sec. "4A," paid out from fore tank. Patent log=9·5 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=13·620 N.M. Depth=21 fms. Drum=28 revs. per min.=5·0 KTS. Ship's engines=35 revs. per min. Weight on brake levers=1384 lbs. Strain=6 to 10 cwt. Strophometer=20 to 26 revs.
	Paying out Pernambuco Light Intermediate.
1.34	SPLICE between Heavy Intermediate, No. 2145, pt. Sec. "4A," and Light Intermediate, No. 2144, pt. Sec. "2A," from fore tank, passed off drum. Heavy Intermediate, No. 2145, pt. Sec. "4A," paid out by Drum measurement. . . . =6·981 N.M. Heavy Intermediate, No. 2145, pt. Sec. "4A," paid out by Factory measurement . . . =6·990 " Difference. . . . = -0·009 N.M.
	Patent log=9·8 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=13·980 N.M. Depth=21 fms. Position { Lat. 7° 58'·1 S. of splice { Long. 34° 39'·3 W.
1.47	Decreased weight on brake levers to 844 lbs. (12 weights).
2.0	2·082 N.M. of Light Intermediate, No. 2144, pt. Sec. "2A," paid out from fore tank. Patent log=11·9 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=16·062 N.M. Depth=23 fms.
	Drum=28 revs. per min.=5·0 KTS. Ship's engines=36 revs. per min. Weight on brake levers=844 lbs. Strain (just lifting). Strophometer=25 revs.
2.30	4·579 N.M. of Light Intermediate, No. 2144, pt. Sec. "2A," paid out from fore tank. Patent log=14·45 N.M.



S.S. "SILVERTOWN."

HOUR.	Paying out Pernambuco Light Intermediate— <i>contd.</i>
P.M.	THURSDAY, AUGUST 11TH, 1892— <i>contd.</i>
	<p>TOTAL CABLE LAID FROM PERNAMBUCO HUT=18·559 N.M.            Depth=26 fms.            Drum=28 revs. per min.=5·0 KTS. Ship's engines=35            revs. per min. Weight on brake levers=844 lbs. Strain=            0 to 5 cwt. Strophometer=26 revs.</p>
2.50	Increased ship's engines to 37 revs. per min.
3.0	<p>7·125 N.M. of Light Intermediate, No. 2144, pt. Sec. "2A,"            paid out from fore tank. Patent log=16·90 N.M.            TOTAL CABLE LAID FROM PERNAMBUCO HUT=21·105 N.M.            Depth=29 fms.            Drum=29 revs. per min.=5·1 KTS. Ship's engines=37            revs. per min. Weight on brake levers=844 lbs. Strain=            0 to 5 cwt. Strophometer=28 to 29 revs.</p>
3.25	Decreased weight on brake levers to 568 lbs.
3.30	<p>9·938 N.M. of Light Intermediate, No. 2144, pt. Sec. "2A,"            paid out from fore tank. Patent log=19·5 N.M.            TOTAL CABLE LAID FROM PERNAMBUCO HUT=23·918 N.M.            Depth=30 to 40 fms.            Drum=31 revs. per min.=5·5 KTS. Ship's engines=37            revs. per min. Weight on brake levers=568 lbs. Strain=            0 to 5 cwt. Strophometer=30 revs.</p>
3.45	<p>11·356 N.M. of Light Intermediate, No. 2144, pt. Sec. "2A,"            paid out from fore tank. Patent log=20·7 N.M.            TOTAL CABLE LAID FROM PERNAMBUCO HUT=25·336 N.M.            Depth=100 fms.            CHANGED COURSE TO N 47° E.            CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST            COURSE, N 67° E (MADE GOOD N 65<math>\frac{3}{4}</math>° E)=21·284 N.M.            DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE,            N 67° E (MADE GOOD N 65<math>\frac{3}{4}</math>° E)=21·100 N.M.            SLACK=0·9%.            Position { Lat. 7° 53'·2 S.                      { Long. 34° 28'·8 W.</p>
3.48	Decreased weight on brake levers to 284 lbs.
4.0	<p>Moderate SE by E wind. Fine, but cloudy. Slight E'ly            sea and swell.            Bar. 30·120 (77° F.). Temp. 76°·6 F. dry, 71°·8 F. wet. Sea            surface 76°·5 F.</p>

S.S. "SILVERTOWN."

Hour.	P.M.	Paying out Pernambuco Light Intermediate— <i>contd.</i>
		THURSDAY, AUGUST 11 <sup>TH</sup> , 1892— <i>contd.</i>
		12·836 N.M. of Light Intermediate, No. 2144, pt. Sec. "2A," paid out from fore tank. Patent log=22·0 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=26·816 N.M. Depth=300 fms. Drum=32 revs. per min.=5·7 KTS. Ship's engines=37 revs. per min. Weight on brake levers=284 lbs. Strain=12 cwt. Strophometer=30 revs.
4.5		Increased weight on brake levers to 497 lbs.
4.7		" " " " 568 "
4.15		" " " " 637 "
		Paying out Pernambuco Heavy Deep Sea.
4.20		SPLICE between Light Intermediate, No. 2144, pt. Sec. "2A," and Heavy Deep Sea, No. 2143, pt. Sec. "2," from fore tank passed off drum. Light Intermediate, No. 2144, pt. Sec. "2A," paid out by Drum measurement .. =14·952 N.M. Light Intermediate, No. 2144, pt. Sec. "2A," by Factory measurement .. .. =14·990 " <div style="text-align: right;">Difference .. .. =-0·038 N.M.</div> Patent log=23·8 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=28·970 N.M. Depth=400 fms. Position { Lat. 7° 50'·9 S. { Long. 34° 26'·3 W.
4.28		Increased weight on brake levers to 844 lbs.
4.30		1·023 N.M. of Heavy Deep Sea, No. 2143, pt. Sec. "2," paid out from fore tank. Patent log=24·7 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=29·993 N.M. Depth=450 fms. Drum=35 revs. per min.=6·2 KTS. Ship's engines=37 revs. per min. Weight on brake levers=844 lbs. Strain=16 cwt. Strophometer=27 to 34 revs. Ship running into deep water. Increasing and decreasing weight on brake levers as necessary.
4.45		Increased ship's engines to 40 revs. per min.
4.55		" weight on brake levers to 1317 lbs.

*Laying the Pernambuco—Fernando Noronha Section.*

S.S. "SILVERTOWN."

Hour. P.M.	Paying out Pernambuco Heavy Deep Sea— <i>contd.</i>
	THURSDAY, AUGUST 11TH, 1892— <i>contd.</i>
5.0	4·158 N.M. of Heavy Deep Sea, No. 2143, pt. Sec. "2," paid out from fore tank. Patent log=27·20 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=33·128 N.M. Depth=560 fms. Drum=35 revs. per min.=6·2 kts. Ship's engines=40 revs. per min. Weight on brake levers=1317 lbs. Strain =24 cwts. Strophometer=29 to 34 revs.
5.2	Position by { Lat. 7° 48'·1 S. observations { Long. 34° 23'·4 W.
5.25	Weight on brake levers 1384 lbs.
5.30	7·368 N.M. of Heavy Deep Sea, No. 2143, pt. Sec. "2," paid out from fore tank. Patent log=30·10 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=36·338 N.M. Depth=698 fms. Drum=36 revs. per min.=6·37 kts. Ship's engines=40 revs. per min. Weight on brake levers=1384 lbs. Strain =25 cwts. Strophometer=24 to 34 revs.
5.40	Weight on brake levers 1582 lbs. Regulating brakes according to depth.
5.50	Weight on brake levers decreased to 1516 lbs.
6.0	10·400 N.M. of Heavy Deep Sea, No. 2143, pt. Sec. "2" paid out from fore tank. Patent log=33·10 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=39·370 N.M. Depth=1109 fms. Drum=34 revs. per min.=6·0 kts. Ship's engines=40 revs. per min. Weight on brake levers=1516 lbs. Strain =23½ cwts. Strophometer=24 to 34 revs.
6.21	12·443 N.M. of Heavy Deep Sea, No. 2143, pt. Sec. "2," paid out from fore tank. Patent log=35·1 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=41·413 N.M. Position { Lat. 7° 42'·5 S. by stars { Long. 34° 17'·4 W. Current observed since 1.0 p.m.=N 8° E, 2·9 N.M.=0·5 KT.
6.30	13·377 N.M. of Heavy Deep Sea, No. 2143, pt. Sec. "2," paid out from fore tank. Patent log=36 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=42·347 N.M. Depth=1500 fms.

S.S. "SILVERTOWN."

Hour.  
P.M

Paying out Pernambuco Heavy Deep Sea—*contd.*

THURSDAY, AUGUST 11TH, 1892—*contd.*

Drum=35 revs. per min.=6.2 kts. Ship's engines=40 revs. per min. Weight on brake levers=1516 lbs. Strain=23 cwt. Strophometer=26 to 33 revs.

- 7.0 16.461 N.M. of Heavy Deep Sea, No. 2143, pt. Sec. "2," paid out from fore tank. Patent log=38.9 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=45.431 N.M.  
Depth=1500 fms.  
Drum=35 revs. per min.=6.2 kts. Ship's engines=40 revs. per min. Weight on brake levers=1516 lbs. Strain=25 cwt. Strophometer=28 to 34 revs.

Paying out Light Deep Sea from Pernambuco towards Fernando.

- 7.14 SPLICE between Heavy Deep Sea, No. 2143, pt. Sec. "2," and Light Deep Sea, No. 2083, Sec. "11," from fore tank, passed off drum.

Heavy Deep Sea, No. 2143, pt. Sec. "2,"  
paid out by Drum measurement. . . =17.949 N.M.  
Paid out by Factory measurement. . . =17.986 "  
Difference . . . = -0.037 "

Patent log=40.4 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=46.956 N.M.  
Depth=1500 fms.  
Position { Lat. 7° 38' 8 S.  
of Splice { Long. 34° 13' 7 W.

- 7.21 0.681 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=40.9 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=47.637 N.M.  
CHANGED COURSE TO N 55° E.  
CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, N 47° E (MADE GOOD N 46° 20' E)=22.301 N.M.  
DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 47° E (MADE GOOD N 46° 20' E)=20.900 N.M.  
SLACK=6.7%.

Position { Lat. 7° 38' 5 S.  
{ Long. 34° 13' 4 W.

- 7.3 1.578 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=41.9 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=48.534 N.M.  
Depth=1500 fms.

S.S. "SILVERTOWN."

HOURL. Paying out Light Deep Sea from Pernambuco towards  
Fernando—contd.

P.M.

THURSDAY, AUGUST 11TH, 1892—contd.

Drum=35 revs. per min.=6.2 KTS. Ship's engines=40 revs. per min. Weight on brake levers=1516 lbs. Strain=28 cwt. Strophometer=27 to 35 revs.

During this afternoon filled forward ballast tank with water=230 tons weight.

8.0 Moderate ESE breeze. Fine and clear. Moderate SE sea. Bar 30.130 (77° F.). Temp. 77° F. dry, 71.3° F. wet. Sea surface 77.4° F.

4.526 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=44.8 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=51.482 N.M.

Depth=1650 fms.

Drum=34 revs. per min.=6.0 KTS. Ship's engines=40 revs. per min. Weight on brake levers=1516 lbs. Strain=30 cwt. Strophometer=25 to 33 revs.

8.30 7.308 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=47.72 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=54.264 N.M.

Depth=1650 fms.

Drum=32 revs. per min.=5.66 KTS. Ship's engines=40 revs. per min. Weight on brake levers=1516 lbs. Strain=30 cwt. Strophometer=26 to 31 revs.

9.0 10.172 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=50.67 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=57.128 N.M.

Depth=1700 fms.

Drum=32 revs. per min.=5.66 KTS. Ship's engines=40 revs. per min. Weight on brake levers=1516 lbs. Strain=30 cwt. Strophometer=26 to 31 revs.

9.3 Increased ship's engines to 42 revs. per min.

9.17 " " " 47 " "

9.20 12.143 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=52.5 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=59.099 N.M.

CHANGED COURSE TO N 30° E.

CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 55° E (MADE GOOD N 55½° E)=11.462 N.M.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 55° E (MADE GOOD N 55½° E)=11.000 N.M.

SLACK=4.2%.

S.S. "SILVERTOWN."

Hour. Paying out Light Deep Sea from Pernambuco towards  
P.M. Fernando—*contd.*

THURSDAY, AUGUST 11TH, 1892—*contd.*

Position { Lat. 7° 32'·1 S.  
Long. 34° 4'·1 W.

- 9.30 13·185 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=53·76 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=60·141 N.M.  
Depth=1850 fms.  
Drum=37 revs. per min.=6·55 KTS. Ship's engines=43 revs. per min. Weight on brake levers=1516 lbs. Strain=29 cwt. Strophometer=28 to 34 revs.
- 9.33 Increased weight on brake levers to 1582 lbs.
- 9.42 " " " " 1648 "
- 9.49 " " " " 1713 "
- 10.0 16·527 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=57·10 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=63·483 N.M.  
Depth=1900 fms.  
Drum=39 revs. per min.=6·90 KTS. Ship's engines=43 revs. per min. Weight on brake levers=1713 lbs. Strain=30 cwt. Strophometer=29 to 40 revs.
- 10.17 Increased weight on brake levers to 1778 lbs.
- 10.24 " " " " 1843 "
- 10.30 20·044 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=60·53 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=67·0 N.M.  
Depth=1950 fms.  
Drum=40 revs. per min.=7·08 KTS. Ship's engines=43 revs. per min. Weight on brake levers=1843 lbs. Strain 30 cwt. Strophometer=30 to 38 revs.
- 11.0 23·699 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=63·96 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=70·655 N.M.  
Depth=2000 fms.  
Drum=41 revs. per min.=7·26 KTS. Ship's engines=43 revs. per min. Weight on brake levers=1843 lbs. Strain=30 cwt. Strophometer=34 to 40 revs.
- 11.24 Increased weight on brake levers to 1908 lbs
- 11.30 27·384 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=67·37 N.M.



S.S. "SILVERTOWN."

Hour. P.M. Paying out Light Deep Sea from Pernambuco towards Fernando—*contd.*

THURSDAY, AUGUST 11TH, 1892—*contd.*

TOTAL CABLE LAID FROM PERNAMBUCO HUT=74·340 N.M.  
Depth=2050 fms.

Drum=41½ revs. per min.=7·3 KTS. Ship's engines=43 revs. per min. Weight on brake levers=1908 lbs. Strain=30 cwt. Strophometer=35 to 41 revs.

11.50 Increased weight on brake levers to 2002 lbs.

MIDNT. Moderate SE by S wind. Fine, but cloudy, with heavy dew. Slight ESE swell.

Bar. 30·174 (77° F.). Temp. 76°·8 F. dry, 71° 5 F. wet. Sea surface 77°·2 F.

31·173 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=70·62 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=78·129 N.M.  
Depth=2100 fms.

Drum=42 revs. per min.=7·43 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2002 lbs. Strain=30 cwt. Strophometer=35 to 39 revs.

Increased weight on brake levers to 2045 lbs.

FRIDAY, AUGUST 12TH, 1892.

A.M.

0.30 34·825 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=74·00 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=81·781 N.M.  
Depth=2150 fms.

Drum=41 revs. per min.=7·25 KTS. Ship's engines=43 revs per min. Weight on brake levers=2045 lbs. Strain=30 cwt. Strophometer=40 revs.

1.0 38·519 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=77·3 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=85·475 N.M.  
Depth=2200 fms.

Drum=41 revs. per min.=7·3 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2045 lbs. Strain=28 cwt. Strophometer=35 to 40 revs.

1.30 42·303 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=80·75 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=89·259 N.M.  
Depth=2200 fms.

Drum=42½ revs per min.=7·5 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2045 lbs. Strain=25 cwt. Strophometer=40 revs.

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Pernambuco towards Fernando— <i>contd.</i>
A.M.	FRIDAY, AUGUST 12TH, 1892— <i>contd.</i>
2.0	46·177 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=84·20 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=93·133 N.M. Depth=2300 fms. Drum=43 revs. per min.=7·6 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2045 lbs. Strain=25 to 28 cwt. Strophometer=40 revs. Increased weight on brake levers to 2310 lbs.
2.30	50·019 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=87·75 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=96·975 N.M. Depth=2300 fms. Drum=43 revs. per min.=7·6 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2310 lbs. Strain=28 cwt. Strophometer=41 revs.
2.34	Reduced ship's engines to 40 revs. per min.; approaching the ridge discovered when sounding.
3.0	53·736 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=91·10 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=100·692 N.M. Depth=2250 fms. Drum=42 revs. per min.=7·4 KTS. Ship's engines=40 revs. per min. Weight on brake levers=2310 lbs. Strain=28 cwt. Strophometer=38 revs. Reduced ship's engines to 36 revs. per min.
3.30	56·787 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=93·85 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=103·743 N.M. Depth=2250 fms. Drum=34½ revs. per min.=6·1 KTS. Ship's engines=36 revs. per min. Weight on brake levers=2310 lbs. Strain=35 cwt. Strophometer=30 to 35 revs.
4.0	Light ESE wind. Fine, but cloudy. Bar. 30·130 (77° F.). Temp. 76°·7 F. dry, 71°·8 F. wet. Sea surface 78° F. 59·755 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=96·50 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=106·711 N.M. Depth=1850 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=36 revs. per min. Weight on brake levers=2310 lbs. Strain=28 cwt. Strophometer=30 to 34 revs.



S.S. "SILVERTOWN."

Hour.      Paying out Light Deep Sea from Pernambuco towards  
A.M.      Fernando—*contd.*

FRIDAY, AUGUST 12TH, 1892—*contd.*

- 4.19      Increased weight on brakes to 2377 lbs.
- 4.30      62·799 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid  
out from fore tank. Patent log=99·20 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=109·755 N.M.  
Depth=1500 fms.  
Drum=34 revs. per min.=6·02 KTS. Ship's engines=  
36 revs. per min. Weight on brake levers=2377 lbs. Strain=  
=28 cwt. Strophometer=32 revs.
- 5.0      65·817 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid  
out from fore tank. Patent log=102·0 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=112·773 N.M.  
Depth=1420 fms.  
Drum=34 revs. per min.=6·02 KTS. Ship's engines=37  
revs. per min. Weight on brake levers=2377 lbs. Strain=  
30 cwts. Strophometer=28 to 34 revs.  
Ship passing over ridge.
- 5.30      68·841 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid  
out from fore tank. Patent log=104·7 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=115·797 N.M.  
Depth=1800 fms.  
Drum=35 revs. per min.=6·19 KTS. Ship's engines=36  
revs. per min. Weight on brake levers=2377 lbs. Strain=  
26 cwts. Strophometer=29 to 33 revs.
- 5.40      Reduced weight on brake levers to 2308 lbs.
- 5.45      Position by { Lat. 6° 43'·9 S.  
observations { Long. 33° 40'·0 W.  
Current observed since 6.21 p.m. yesterday=N 54° W,  
6·5 N.M.=0·6 KT.
- 5.47      Reduced weight on brake levers to 1977 lbs.
- 5.52      Increased    "    "    "    "    "    2108    "
- 6.0      71·812 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid  
out from fore tank. Patent log=107·3 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=118·768 N.M.  
Depth=2000 fms.  
Drum=33 revs. per min.=5·84 KTS. Ship's engines=36  
revs. per min. Weight on brake levers=2108 lbs. Strain=  
25 cwt. Strophometer=28 to 31 revs.

S.S. "SILVERTOWN."

Hour. Paying out Light Deep Sea from Pernambuco towards Fernando—*contd.*

FRIDAY, AUGUST 12TH, 1892—*contd.*

A.M.

6.10 Reduced weight on brake levers to 2043 lbs.

6.16 " " " " 1977 "

6.26 Increased weight on brake levers to 2110 lbs.

6.30 74·609 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=110·0 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=121·565 N.M.

Depth=2387 fms.

Drum=33 revs. per min.=5·84 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=2110 lbs. Strain=24 cwt. Strophometer=28 to 31 revs.

CHANGED COURSE TO N 36° E.

CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 30° E (MADE GOOD N 26½° E)=62·466 N.M.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 30° E (MADE GOOD N 26½° E)=56·980 N.M.

SLACK=9·6%.

Position { Lat. 6° 41'·1 S.  
Long. 33° 38'·7 W.

6.32 Increased ship's engines to 40 revs.

6.39 " " " 41 "

6.41 " weight on brake levers to 2309 lbs.

7.0 77·713 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=113·0 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=124·669 N.M.

Depth=2400 fms.

Drum=37 revs. per min.=6·55 KTS. Ship's engines=41 revs. per min. Weight on brake levers=2309 lbs. Strain=30 cwt. Strophometer=28 to 36 revs.

7.10 Increased weight on brake levers to 2379 lbs.

7.29 Reduced weight on brake levers to 2311 lbs.

7.30 81·003 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=116·2 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=127·959 N.M.

Depth=2400 fms.

Drum=38 revs. per min.=6·72 KTS. Ship's engines=41 revs. per min. Weight on brake levers=2311 lbs. Strain=30 cwt. Strophometer=31 to 36 revs.

S.S. "SILVERTOWN."

HOOR. Paying out Light Deep Sea from Pernambuco towards  
A.M. Fernando—*contd.*

FRIDAY, AUGUST 12TH, 1892—*contd.*

- 7.45 Decreased weight on brake levers to 2245 lbs.
- 8.0 Light ESE wind. Fine and clear. Slight SE sea and swell.  
Bar. 30.170 (77° F.). Temp. 77°.3 F. dry, 72°.5 F. wet  
Sea surface 78°.4 F.  
84.357 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=119.40 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=131.313 N.M.  
Depth=2400 fms.  
Drum=39 revs. per min.=6.9 KTS. Ship's engines=42 revs. per min. Weight on brake levers=2245 lbs. Strain=31 cwt. Strophometer=32 to 37 revs.
- 8.30 87.785 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=122.65 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=134.741 N.M.  
Depth=2400 fms.  
Drum=40 revs. per min.=7.08 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2245 lbs. Strain=30 cwt. Strophometer=33 to 40 revs.
- 9.0 91.319 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=126.15 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=138.275 N.M.  
Depth=2400 fms.  
Drum=40 revs. per min.=7.0 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2245 lbs. Strain=30 cwt. Strophometer=38 revs.
- 9.13 Position by { Lat. 6° 27'.3 S.  
observations { Long. 33° 30'.0 W.
- 9.30 94.889 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=129.62 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=141.845 N.M.  
Depth=2400 fms.  
Drum=40 revs. per min.=7.0 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2245 lbs. Strain=30 cwt. Strophometer=34 to 37 revs.
- 10.0 98.536 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=133.08 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=145.492 N.M.  
Depth=2450 fms.

*Laying the Pernambuco—Fernando Noronha Section.*

S.S. "SILVERTOWN."

Hour. A.M.	Paying out Light Deep Sea from Pernambuco towards Fernando— <i>contd.</i>
	FRIDAY, AUGUST 12TH, 1892— <i>contd.</i>
	Drum=40 revs. per min.=7.08 kts. Ship's engines=44 revs. per min. Weight on brake levers=2245 lbs. Strain =30 cwt. Strophometer=36 to 40 revs.
10.30	102.215 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=136.62 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=149.171 N.M. Depth=2450 fms. Drum=41 revs. per min.=7.26 kts. Ship's engines=44 revs. per min. Weight on brake levers=2245 lbs. Strain =30 cwt. Strophometer=35 to 40 revs.
11.0	105.882 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=140.13 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=152.838 N.M. Depth=2480 fms. Drum=41 revs. per min.=7.26 kts. Ship's engines=43 revs. per min. Weight on brake levers=2245 lbs. Strain= 30 cwt. Strophometer=34 to 39 revs.
11.5	Increased weight on brake levers to 2313 lbs.
11.15	107.717 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=141.8 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=154.673 N.M. Depth=2480 fms. CHANGED COURSE TO N 18½° E. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 36° E (MADE GOOD N 33¾° E)=33.108 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 36° E (MADE GOOD N 33¾° E)=28.980 N.M. SLACK=14.2%. Position { Lat. 6° 17' 0 S. { Long. 33° 22' 6 W.
11.30	109.570 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=143.62 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=156.526 N.M. Depth=2485 fms. Drum=41½ revs. per min.=7.40 kts. Ship's engines=43 revs. per min. Weight on brake levers=2313 lbs. Strain= 30 cwt. Strophometer=35 to 41 revs.
11.35	Increased weight on brake levers to 2379 lbs.

S.S. "SILVERTOWN."

HOURL. Paying out Light Deep Sea from Pernambuco towards  
Fernando—contd.

A.M.

FRIDAY, AUGUST 12TH, 1892—contd.

11.52 (Observed noon.) 112.331 N.M. of Light Deep Sea, No. 2083,  
Sec. "11," paid out from fore tank. Patent log=146.3 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=159.287 N.M.  
DISTANCE, BY CHART, OVERGROUND, FROM PERNAMBUCO  
HUT=145.710 N.M.  
SLACK=9.3%.  
Position by { Lat. 6° 13' 2 S.  
observations { Long. 33° 21' 1 W.  
Current observed since 9.13 a.m.=S 13° W, 0.9 N.M.=0.4  
KT.

NOON.

Light ESE breeze. Fine and clear. Slight ESE swell.  
Bar. 30.178 (79° F.). Temp. 77.5° F. dry, 72.8° F. wet.  
Sea surface 78.8° F.  
113.220 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid  
out from fore tank. Patent log=147.12 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=160.176 N.M.  
Depth=2480 fms.  
Drum=41½ revs. per min.=7.3 KTS. Ship's engines 43  
revs. per min. Weight on brake levers=2379 lbs. Strain  
=30 cwt. Strophometer=34 to 38 revs.

P.M.

0.30

116.724 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid  
out from fore tank. Patent log=150.50 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=163.680 N.M.  
Depth=2500 fms.  
Drum=39 revs. per min.=6.9 KTS. Ship's engines=43  
revs. per min. Weight on brake levers=2379 lbs. Strain=  
30 cwt. Strophometer=35 to 40 revs.  
Received from Pernambuco the following message:—  
"Gray. Parsoné leaves per 'Magdalena' to-day 5 p.m."

1.0

Since 0.45 p.m. gradually increased weight on brake levers  
to 2683 lbs.  
120.199 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid  
out from fore tank. Patent log=153.75 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=167.155 N.M.  
Depth=2500 fms.  
Drum=39 revs. per min.=6.9 KTS. Ship's engines=  
43 revs. per min. Weight on brake levers=2683 lbs.  
Strain=30 cwt. Strophometer=35 to 40 revs.  
Sent the following telegram to Pernambuco for trans-  
mission to London:—"Peake to Clark Forde. Twelfth



*Laying the Pernambuco—Fernando Noronha Section.*

S.S. "SILVERTOWN."

Hour. P.M.	Paying out Light Deep Sea from Pernambuco towards Fernando— <i>contd.</i>
	FRIDAY, AUGUST 12 <sup>TH</sup> , 1892— <i>contd.</i>
	August, noon; latitude six thirteen, longitude thirty-three twenty-two. Cable paid out one hundred fifty-nine knots. All well. Copy Silvergray."
1.15	Increased weight on brake levers to 2742 lbs.
1.30	123·690 N.M. of Light Deep Sea, No. 2083, Sec. "11," paid out from fore tank. Patent log=157·30 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=170·646 N.M. Depth=2500 fms. Drum=40 revs. per min.=7·08 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2742 lbs. Strain= 35 cwt. Strophometer=38 revs.
1.35	SPLICE between Light Deep Sea, No. 2083, Sec. "11," and Light Deep Sea, No. 2083, Sec. "9," from fore tank, passed off drum. Light Deep Sea, No. 2083, Sec. "11," paid out by Drum measurement .. .. 124·283 N.M. Paid out by Factory measurement .. .. 124·366 .. <div style="text-align: right;">Difference .. .. = - 0·803 N.M.</div> Patent log=157·90 N.M. TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM PERNAMBUCO HUT=171·322 N.M. Position { Lat. 6° 3' 0 S. of Splice { Long. 33° 17' 3 W.
2.0	2·909 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=160·8 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=174·231 N.M. Depth=2500 fms. Drum=39½ revs. per min.=6·97 KTS. Ship's engines= 43 revs. per min. Weight on brake levers=2742 lbs. Strain=35 cwt. Strophometer=35 revs.
2.30	6·449 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=164·30 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=177·771 N.M. Depth=2500 fms. Drum=40 revs. per min.=7·08 KTS. Ship's engines= 43 revs. per min. Weight on brake levers=2742 lbs. Strain=35 cwt. Strophometer=38 revs.
3.0	10·113 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=167·80 N.M.

S.S. "SILVERTOWN."

Hour. Paying out Light Deep Sea from Pernambuco towards  
P.M. Fernando—*contd.*

FRIDAY, AUGUST 12TH, 1892—*contd.*

TOTAL CABLE LAID FROM PERNAMBUCO HUT=181·435 N.M.  
Depth=2500 fms.

Drum=41½ revs. per min.=7·32 KTS. Ship's engines=  
43½ revs. per min. Weight on brake levers=2742 lbs.  
Strain=33 cwt. Strophometer=38 revs.

3.30 13·795 N.M. of Light Deep Sea, No. 2083, Sec. "9,"  
paid out from fore tank. Patent log=171·30 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=185·117 N.M.  
Depth=2500 fms.

Drum=41½ revs. per min.=7·32 KTS. Ship's engines=  
44 revs. per min. Weight on brake levers=2742 lbs.  
Strain=30 to 32 cwt. Strophometer=38 revs.

4.0 Light SE wind. Fine, but overcast and squally.  
Bar. 30·130 (79° F.). Temp. 77°·8 F. dry, 73° F. wet. Sea  
surface 79° F.

17·336 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid  
out from fore tank. Patent log=174·70 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=188·658 N.M.  
Depth=2500 fms.

Drum=40 revs. per min.=7·08 KTS. Ship's engines=42  
revs. per min. Weight on brake levers=2742 lbs. Strain=  
36 cwt. Strophometer=37 revs.

4.30 20·761 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out  
from fore tank. Patent log=178·10 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=192·083 N.M.  
Depth=2519 fms.

Drum=39 revs. per min.=6·90 KTS. Ship's engines=43  
revs. per min. Weight on brake levers=2742 lbs. Strain=  
36 cwt. Strophometer=36 revs.

5.0 24·289 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out  
from fore tank. Patent log=181·6 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=195·611 N.M.  
Depth=2525 fms.

Drum=40 revs. per min.=7·08 KTS. Ship's engines=43  
revs. per min. Weight on brake levers=2742 lbs. Strain=  
36 cwt. Strophometer=36 revs.

5.30 27·803 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out  
from fore tank. Patent log=185·20 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=199·125 N.M.  
Depth=2530 fms.

S.S. "SILVERTOWN."

Hour. P.M. Paying out Light Deep Sea from Pernambuco towards Fernando—*contd.*

FRIDAY, AUGUST 12TH, 1892—*contd.*

Drum=40 revs. per min.=7.08 kts. Ship's engines=43 revs. per min. Weight on brake levers=2742 lbs. Strain=36 cwt. Strophometer=36 revs.

6.0 31.305 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=188.75 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=202.627 N.M.  
Depth=2537 fms.

Drum=40 revs. per min.=7.08 kts. Ship's engines=43 revs. per min. Weight on brake levers=2742 lbs. Strain=36 cwt. Strophometer=36 revs.

6.30 34.913 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=192.4 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=206.235 N.M.  
Depth=2520 fms.

Drum=41 revs. per min.=7.26 kts. Ship's engines=44 revs. per min. Weight on brake levers=2742 lbs. Strain=36 cwt. Strophometer=36.5 revs.

7.0 38.501 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=195.8 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=209.823 N.M.  
Depth=2520 fms.

Drum=40 revs. per min.=7.08 kts. Ship's engines=43 revs. per min. Weight on brake levers=2742 lbs. Strain=36 cwt. Strophometer=36 revs.

7.30 41.997 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=199.4 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=213.319 N.M.  
Depth=2520 fms.

Drum=40 revs. per min.=7.08 kts. Ship's engines=43 revs. per min. Weight on brake levers=2742 lbs. Strain=36 cwt. Strophometer=36 revs.

8.0 Light SE by S wind. Fine, but overcast.  
Bar. 30.145 (79° F.). Temp. 77°-8 F. dry, 73°-5 F. wet.  
Sea surface 77° F.

45.505 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=202.83 N.M.  
TOTAL CABLE LAID FROM PERNAMBUCO HUT=216.827 N.M.  
Depth=2520 fms.



S.S. "SILVERTOWN."

Hour. P.M.	Paying out Light Deep Sea from Pernambuco towards Fernando— <i>contd.</i>
	FRIDAY, AUGUST 12TH, 1892— <i>contd.</i>
	Drum=40 revs. per min.=7·08 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2742 lbs. Strain =36 cwt. Strophometer=36 revs.
8.30	48·966 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=206·24 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=220·288 N.M. Depth=2520 fms. Drum=39 revs. per min.=6·9 KTS. Ship's engines=42 revs. per min. Weight on brake levers=2742 lbs. Strain =36 cwt. Strophometer=34 to 37 revs.
9.0	52·441 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=209·63 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=223·763 N.M. Depth=2520 fms. Drum=39 revs. per min.=6·9 KTS. Ship's engines=42 revs. per min. Weight on brake levers=2742 lbs. Strain =36 cwt. Strophometer=34 to 37 revs.
9.30	55·949 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=213·18 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=227·271 N.M. Depth=2520 fms. Drum=39 revs. per min.=6·9 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2742 lbs. Strain =36 cwt. Strophometer=34 to 40 revs.
10.0	59·537 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=216·63 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=230·859 N.M. Depth=2520 fms. Drum=40·5 revs. per min.=7·17 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2742 lbs. Strain =36 cwt. Strophometer=35 to 38 revs.
10.30	63·127 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=220·15 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=234·449 N.M. Depth=2520 fms. Drum=40 revs. per min.=7·08 KTS. Ship's engines= 43 revs. per min. Weight on brake levers=2742 lbs Strain=36 cwt. Strophometer=34 to 40 revs.

*Laying the Pernambuco—Fernando Noronha Section.*

S.S. "SILVERTOWN."

Hour. P.M.	Paying out Light Deep Sea from Pernambuco towards Fernando— <i>contd.</i>
	FRIDAY, AUGUST 12TH, 1892— <i>contd.</i>
11.0	66·735 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=223·62 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=238·057 N.M. Depth=2520 fms. Drum=40·5 revs. per min.=7·17 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2742 lbs. Strain=36 cwt. Strophometer=34 to 40 revs.
11.30	70·364 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=227·16 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=241·686 N.M. Depth=2520 fms. Drum=40·5 revs. per min.=7·17 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2742 lbs. Strain=36 cwt. Strophometer=36 to 40 revs.
MIDNT.	Light SE by E wind. Fine, but cloudy, with dew. Slight E'ly swell. Bar. 30·150 (79° F.). Temp. 77°·3 F. dry, 73°·8 F. wet. Sea surface 77°·8 F. 74·019 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=230·60 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=245·341 N.M. Depth=2520 fms. Drum=41 revs. per min.=7·26 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2742 lbs. Strain=36 cwt. Strophometer=34 to 39 revs.
	SATURDAY, AUGUST 13TH, 1892.
A.M.	
0.10	Decreased weight on brake levers to 2676 lbs.
0.30	77·601 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=234·20 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=248·923 N.M. Depth=2520 fms. Drum=40 revs. per min.=7·08 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2676 lbs. Strain=36 cwt. Strophometer=38 revs.
1.0	81·256 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=237·65 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=252·578 N.M. Depth=2525 fms.

S.S. "SILVERTOWN."

HOUR. A.M.	Paying out Light Deep Sea from Pernambuco towards Fernando— <i>contd.</i>
	SATURDAY, AUGUST 13TH, 1892— <i>contd.</i>
	Drum=41 revs. per min.=7.26 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2676 lbs. Strain=36 cwt. Strophometer=38 revs.
1.30	84.855 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=241.10 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=256.177 N.M. Depth=2530 fms. Drum=40 revs. per min.=7.08 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2676 lbs. Strain=36 cwt. Strophometer=38 revs.
2.0	88.572 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=244.60 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=259.894 N.M. Depth=2530 fms. Drum=42 revs. per min.=7.43 KTS. Ship's engines=43½ revs. per min. Weight on brake levers=2676 lbs. Strain=35 cwt. Strophometer=38 revs.
2.30	92.308 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=248.20 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=263.630 N.M. Depth=2500 fms. Drum=42 revs. per min.=7.46 KTS. Ship's engines=43½ revs. per min. Weight on brake levers=2676 lbs. Strain=35 cwt. Strophometer=38 revs.
3.0	95.957 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=251.60 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=267.279 N.M. Depth=2500 fms. Drum=41 revs. per min.=7.28 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2676 lbs. Strain=35 cwt. Strophometer=38 revs.
3.30	99.507 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=255.10 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=270.829 N.M. Depth=2450 fms. Drum=40 revs. per min.=7.08 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2676 lbs. Strain=33 cwt. Strophometer=37 revs.
4.0	Light ESE wind. Fine, but cloudy. Slight ESE swell. Bar. 30.100 (77° F.). Temp. 77° 0 F. dry, 73° 5 F. wet. Sea surface 78° F.

S.S. "SILVERTOWN."

Hour.  
A.M.

Paying out Light Deep Sea from Pernambuco towards  
Fernando—*contd.*

SATURDAY, AUGUST 13TH, 1892—*contd.*

103·011 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid  
out from fore tank. Patent log=258·60 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=274·333 N.M.  
Depth=2400 fms.

Drum=39½ revs. per min.=7·0 KTS. Ship's engines=43  
revs. per min. Weight on brake levers=2676 lbs. Strain  
=35 cwt. Strophometer=36 revs.

4.30

106·478 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid  
out from fore tank. Patent log=262·0 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=277·800 N.M.  
Depth=2400 fms.

Drum=40 revs. per min.=7·08 KTS. Ship's engines=43  
revs. per min. Weight on brake levers=2676 lbs. Strain  
=34 cwt. Strophometer=36 revs.

5.0

109·939 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid  
out from fore tank. Patent log=265·4 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=281·261 N.M.  
Depth=2400 fms.

Drum=39 revs. per min.=6·90 KTS. Ship's engines=43  
revs. per min. Weight on brake levers=2676 lbs. Strain=33  
cwt. Strophometer=36 revs.

5.30

113·438 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid  
out from fore tank. Patent log=268·8 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=284·760 N.M.  
Depth=2400 fms.

Drum=40 revs. per min.=7·08 KTS. Ship's engines=43  
revs. per min. Weight on brake levers=2676 lbs. Strain=32  
cwt. Strophometer=35·5 revs.

5.36

Position by { Lat. 4° 24'·6 S.  
observations { Long. 32° 40'·2 W.

Current observed since apparent noon yesterday=S 74° W,  
4·3 N.M.=0·3 KT.

6.0

116·981 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid  
out from fore tank. Patent log=272·3 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=288·303 N.M.  
Depth=2400 fms.

Drum=40 revs. per min.=7·08 KTS. Ship's engines=43  
revs. per min. Weight on brake levers=2676 lbs. Strain=32  
cwt. Strophometer=35 revs.

S.S. "SILVERTOWN."

Hour.  
A.M.

Paying out Light Deep Sea from Pernambuco towards  
Fernando—*contd.*

SATURDAY, AUGUST 13TH, 1892—*contd.*

CHANGED COURSE TO N 5° W.

CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, N 18½° E (MADE GOOD N 20¼° E)=133·630 N.M.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE. N 18½° E (MADE GOOD N 20¼° E)=122·100 N.M.

SLACK=9·44°/.

Position { Lat. 4° 22'·5 S.  
Long. 32° 39'·7 W.

6.30 120·474 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=275·9 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=291·796 N.M.

Depth=2350 fms.

Drum=39 revs. per min.=6·9 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2676 lbs. Strain=30 cwt. Strophometer=35 revs.

7.0 124·008 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=279·40 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=295·330 N.M.

Depth=2350 fms.

Drum=39 revs. per min.=6·9 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2676 lbs. Strain=32 cwt. Strophometer=36 revs.

7.30 127·581 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=283·0 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=298·903 N.M.

Depth=2300 fms.

Drum=39½ revs. per min.=7·0 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2676 lbs. Strain=36 cwt. Strophometer=35 revs.

7.40 128·797 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=283·95 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=300·119 N.M.

Sighted the Peak of Fernando Noronha.

7.52 Position { Lat. 4° 12'·0 S.  
by land { Long. 32° 41'·3 W.

Peak bearing N 35° E.

Current observed since 5.36 a.m.=S 52° W, 1·9 N.M.=0·9 KT.



S.S. "SILVERTOWN."

HOUR. A.M.	Paying out Light Deep Sea from Pernambuco towards Fernando— <i>contd.</i>
SATURDAY, AUGUST 13TH, 1892— <i>contd.</i>	
8.0	<p>Moderate E'ly breeze. Fine, but cloudy. Slight sea and swell from SE.</p> <p>Bar. 30.130 (79° F.). Temp. 78° F. dry, 74°·5 F. wet. Sea surface 78° F.</p> <p>131.148 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=286.33 N.M.</p> <p>TOTAL CABLE LAID FROM PERNAMBUCO HUT=302.470 N.M.</p> <p>Depth=2270 fms.</p> <p>Drum=40 revs. per min.=7.08 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2676 lbs. Strain=36 cwt. Strophometer=30 to 35 revs.</p>
8.30	<p>134.635 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=289.65 N.M.</p> <p>TOTAL CABLE LAID FROM PERNAMBUCO HUT=305.957 N.M.</p> <p>Depth=2270 fms.</p> <p>Drum=40 revs. per min.=7.08 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2676 lbs. Strain=36 cwt. Strophometer=33 to 37 revs.</p>
9.0	<p>138.137 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=292.94 N.M.</p> <p>TOTAL CABLE LAID FROM PERNAMBUCO HUT=309.459 N.M.</p> <p>Depth=2100 fms.</p> <p>Drum=40 revs. per min.=7.08 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2676 lbs. Strain=36 cwt. Strophometer=31 to 37 revs.</p>
9.30	<p>141.681 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=296.50 N.M.</p> <p>TOTAL CABLE LAID FROM PERNAMBUCO HUT=313.003 N.M.</p> <p>Depth=1900 fms.</p> <p>Drum=40 revs. per min.=7.08 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2676 lbs. Strain=36 cwt. Strophometer=34 to 38 revs.</p>
9.40	<p>Dynamometer fell to 30 cwt. Ship running into shoaler water.</p>
9.42	<p>Decreased weight on brake levers to 2610 lbs.</p>
9.45	<p>Position { Lat. 3° 58'·9 S. Long. 32° 40'·4 W.</p> <p>Peak bearing N 60° E, 17.3 N.M. distant by vertical angle.</p>

S.S. "SILVERTOWN."

HOUR. A.M.	Paying out Light Deep Sea from Pernambuco towards Fernando— <i>contd.</i>
SATURDAY, AUGUST 13TH, 1892— <i>contd.</i>	
10.0	<p>145·336 N.M. of Light Deep Sea, No. 2083, Sec. "9" paid out from fore tank. Patent log=299·9 N.M.  TOTAL CABLE LAID FROM PERNAMBUCO HUT=316·658 N.M.  Depth=1500 fms.  Drum=39½ revs. per min.=7·0 KTS. Ship's engines=42 revs. per min. Weight on brake levers=2610 lbs. Strain=30 cwt. Strophometer=38½ revs.  Peak bearing N 65° E, 17·2 N.M. distant.</p>
10.30	<p>149·127 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=303·45 N.M.  TOTAL CABLE LAID FROM PERNAMBUCO HUT=320·449 N.M.  Depth=1300 to 1800 fms.  Drum=43½ revs. per min.=7·7 KTS. Ship's engines=43½ revs. per min. Weight on brake levers=2610 lbs. Strain=25 cwt. Strophometer=38 to 40 revs.  CHANGED COURSE TO N 10° E.  CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 5° W=32·146 N.M.  DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 5° W=28·310 N.M.  SLACK=13·55°/°.  Position { Lat. 3° 54'·35 S.                { Long. 32° 42'·20 W.  Peak bearing N 76° E, 17·2 N.M. distant.</p>
10.39	Decreased weight on brake levers to 2426 lbs.
11.0	<p>152·670 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=306·90 N.M.  TOTAL CABLE LAID FROM PERNAMBUCO HUT=323·992 N.M.  Depth=1340 to 1450 fms.  Drum=40 revs. per min.=7·08 KTS. Ship's engines=43 revs. per min. Weight on brake levers=2426 lbs. Strain=25 cwt. Strophometer=36 to 39 revs.  Peak bearing N 86¾° E, 16·5 N.M. distant.</p>
11.8	<p>153·712 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=307·9 N.M.  TOTAL CABLE LAID FROM PERNAMBUCO HUT=325·034 N.M.  CHANGED COURSE TO A CURVE TO THE N'D AND E'D.  CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 10° E. (MADE GOOD N 4½° E)=4·585 N.M.</p>

*Laying the Pernambuco—Fernando Noronha Section.*

S.S. "SILVERTOWN."

Hour. A.M.	Paying out Light Deep Sea from Pernambuco towards Fernando— <i>contd.</i>
	SATURDAY, AUGUST 13TH, 1892— <i>contd.</i>
	DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 10° E (MADE GOOD N 4½° E)=4·000 N.M. SLACK=14·6°/°.
	Position { Lat. 3° 50'·35 S. Long. 32° 41'·90 W.
11.10	Decreased weight on brake levers to 1317 lbs.
11.15	Peak bearing S 85½° E, 15·6 N.M. distant.
11.16	154·580 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. TOTAL CABLE LAID FROM PERNAMBUCO HUT=325·902 N.M. CHANGED COURSE TO A CURVE TO THE E'D. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE (CURVE) =0·868 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE (CURVE)=0·800 N.M. SLACK=8·5°/°.
	Position { Lat. 3° 49'·55 S. Long. 32° 41'·75 W.
	Peak bearing about S 87° E.
11.25	During last few minutes decreased weight on brake levers to 1183 lbs
11.30	155·922 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=310·24 N.M. TOTAL CABLE LAID FROM PERNAMBUCO HUT=327·244 N.M. Depth=1300 fms. Drum=36 revs. per min.=6·37 KTS. Ship's engines=43 revs. per min. Weight on brake levers=1183 lbs. Strain= 18 cwt. Strophometer=30 to 32 revs. Peak bearing 83½° E, 15·2 N.M. distant.
11 33	156·278 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. TOTAL CABLE LAID FROM PERNAMBUCO HUT=327·600 N.M. CHANGED COURSE TO N 77° E. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE (CURVE) =1·698 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE (CURVE)=1·500 N.M. SLACK=13·2°/°.



S.S. "SILVERTOWN."

HOOR. Paying out Light Deep Sea from Pernambuco towards  
A.M. Fernando—*contd.*

SATURDAY, AUGUST 13TH, 1892—*contd.*

Position { Lat. 3° 48' 50 S.  
Long. 32° 40' 70 W.

11.34 Decreased weight on brake levers to 980 lbs.

11.47 " " " " 912 "

11.50 (Observed noon.) 157·930 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Total cable laid from Pernambuco Hut=329·252 N.M.

TOTAL CABLE LAID SINCE OBSERVED NOON YESTERDAY=169·965 N.M.

NOON. Moderate E'ly wind. Fine, but cloudy. Moderate SE sea and swell.

Bar. 30·130 (79° F.). Temp. 79°·3 F. dry, 74°·5 F. wet. Sea surface 78°·8 F

159·002 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=313·54 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=330·324 N.M.  
Depth=1300 fms.

Drum=37 revs. per min.=6·55 KTS. Ship's engines=43 revs. per min. Weight on brake levers=912 lbs. Strain=17 cwt. Strophometer=32 to 34 revs.

Peak bearing S 78½° E, 12·2 N.M. distant.

P.M.

0.3 Decreased weight on brake levers to 843 lbs.

0.18 Sent the following telegram to Pernambuco for transmission to London:—"Peake to Clark Forde. 13th August, noon. Now going to make final splice. Copy Silvergray."

0.30 162·332 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=316·96 N.M.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=333·654 N.M.  
Depth=1300 fms.

Drum=37½ revs. per min.=6·6 KTS. Ship's engines=43 revs. per min. Weight on brake levers=843 lbs. Strain=17 cwt. Strophometer=33 to 35 revs.

Peak bearing S 71° E, 9·0 N.M. distant.

0.35 Sighted Buoy 22 W, let go on Fernando Noronha End on the 7th inst., bearing S 81° E.

*Laying the Pernambuco—Fernando Noronha Section*

S.S. "SILVERTOWN."

Hour. P.M.	Paying out Light Deep Sea from Pernambuco towards Fernando— <i>contd.</i>
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SATURDAY, AUGUST 13TH, 1892—*contd.*

- |      |   |
|------|---|
| 1.0  | <p>165·776 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank. Patent log=320·26 N.M.<br/> TOTAL CABLE LAID FROM PERNAMBUCO HUT=337·098 N.M.<br/> Depth=1300 to 1100 fms.<br/> Drum=38 revs. per min.=6·73 KTS. Ship's engines=43 revs. per min. Weight on brake levers=843 lbs. Strain=14 cwt. Strophometer=33 to 35 revs.<br/> CHANGED COURSE TO A CURVE TO S'D AND E'D.<br/> CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 77° E (MADE GOOD N 80° E)=9·498 N.M.<br/> DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 77° E (MADE GOOD N 80° E)=9·330 N.M.<br/> SLACK=1·8%<br/> Position { Lat. 3° 46'·7 S.<br/>               Long. 32° 31'·5 W.<br/> Peak bearing S 59½° E, 6·95 N.M. distant.</p> |
| 1.1  | Decreased ship's engines to 35 revs. per min.   |
| 1.5  | <p>166·280 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank.<br/> TOTAL CABLE LAID FROM PERNAMBUCO HUT=337·602 N.M.<br/> CHANGED COURSE TO S 58° E.<br/> CABLE, BY INDICATOR, PAID OUT ON LAST COURSE (CURVE)=0·504 N.M.<br/> DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE (CURVE)=0·450 N.M.<br/> SLACK=12·0%<br/> Position { Lat. 3° 46'·7 S.<br/>               Long. 32° 31'·05 W.<br/> Peak bearing S 58° E, 6·35 N.M. distant.</p>   |
| 1.6  | Decreased ship's engines to 25 revs. per min.   |
| 1.35 | <p>168·236 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank.<br/> TOTAL CABLE LAID FROM PERNAMBUCO HUT=339·558 N.M.</p>  |
| 1.57 | Cable running out according to strain. Brakes right up. Ship's engines=25 revs. per min.  |
| 2.5  | Stopped ship's engines.   |

S.S. "SILVERTOWN."

Hour.      Paying out Light Deep Sea from Pernambuco towards  
P.M.                      Fernando—*contd.*

SATURDAY, AUGUST 13TH, 1892—*contd.*

2.10      Moving ship's engines as required to bring ship up to Buoy 22 W on Fernando Noronha End.

Cable running out slowly to strain. Hauled in patent log=323·7 N.M.

R.M.S. "Magdalena" passed, bound North.

**Up to Buoy on Fernando End.**

2.13      Ship now close to Buoy 22 W. Lowered surf boat and sent it away to dismantle buoy.

2.20      Passed rope from port picking-up drum over port bow sheave to boat at buoy.

2.22      Drum rope shackled on to moorings of buoy, commenced to heave in on rope with port picking-up drum. Paying out on Pernambuco End over stern sheave as necessary.

2.26      Buoy 22 slipped from moorings.

2.32      Buoy 22 hoisted on board.  
Peak bearing S 56½° E, 4·0 N.M. distant.

2.33      Pernambuco cable (Light Deep Sea from fore tank) now almost up and down over stern and stopped.  
170·997 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank.

TOTAL CABLE LAID FROM PERNAMBUCO HUT=342·319 N.M.

Put engine of paying-out machine in gear, ready to pay out cable when necessary.

2.35      Picking up on moorings of buoy on Fernando Noronha End very slowly, owing to strain, which varies from 2 tons to 3·7 tons. Paying out on Pernambuco End as required.

2.39      Hoisted up surf boat.

2.50      Strain on buoy moorings suddenly dropped from 5½ tons to zero on dynamometer.

2.53      Lowered steam-launch. Strain on moorings again rising.

3.10      Strain on buoy moorings varying from 2 tons to 6½ tons.



S.S. "SILVERTOWN."

Hour.  
P.M.

At Buoy on Fernando End—*contd.*

SATURDAY, AUGUST 13TH, 1892—*contd.*

- 4.34 Enough cable on quarter deck. Cut the Light Deep Sea cable, on Pernambuco End, close to paying-out drum, and set about passing Pernambuco End from stern sheave round starboard side of ship to starboard bow sheave, for splice with Fernando Noronha End.  
0·372 N.M. of Light Deep Sea, No. 2083, Sec. "9," paid out from fore tank on Pernambuco End since Factory mile-mark No. 171, in the same section passed off drum at 3.12 p.m.  
TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM PERNAMBUCO HUT=342·680 N.M.  
7·244 N.M. of Light Deep Sea, No. 2083, Sec. "9," remaining in fore tank.  
CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, S 58° E=5·065 N.M. (corrected to 6.35 p.m.).
- 4.35 Cut 5 fms.=0·005 N.M. off Fernando Noronha End (Heavy Deep Sea type) for damaged sheathing, and attached lead from testing-room.  
1·300 N.M. of Heavy Deep Sea, No. 2143, pt. Sec. "2," now remaining on Fernando Noronha End, and the total length of cable laid from Fernando Noronha Hut to this cut=5·273 N.M.
- 4.50 Pernambuco End of Cable (Light Deep Sea, Sec. "9") from stern sheave brought inboard over starboard bow sheave and taken to with starboard picking-up drum. Commenced to heave in the slack on Pernambuco End with starboard picking-up drum. Coiling cable down on main deck.
- 4.53 Let go bight of Pernambuco End from stern sheave.
- 5.0 Stopped heaving in on Pernambuco End=0·062 N.M. picked up on Pernambuco End and coiled down on main deck.
- 5.5 Tests on Fernando Noronha End unsatisfactory. Cable making "dead earth" about 1 N.M. from ship.
- 5.25 Bent stoppers on Pernambuco End on bow baulks.
- 5.33 Lead from testing room attached to Pernambuco End.
- 5.44 Testing room finished with Pernambuco End, on which the tests are very satisfactory.
- 5.45 Commenced to open out Pernambuco End and Light Deep Sea in fore tank for splice.

*Laying the Pernambuco—Fernando Noronha Section.*

S.S. "SILVERTOWN."

HOUR. P.M.	Picking up on Fernando End.
SATURDAY, AUGUST 13TH, 1892— <i>contd.</i>	
It is decided to splice the Pernambuco End on to cable in fore tank again, and while picking up on Fernando Noronha End (to get fault inboard) to pay out on Pernambuco End from fore tank with starboard picking-up drum.	
6.3	Mr. T. E. M. Rymer-Jones left in steam-launch with dingey in tow for Cable Hut, taking with him instructions to Mr. P. C. Willmott-Dixon, at Cable Hut, as regards testing and keeping watch at Hut till further advised. Also taking ashore a large tank lamp to burn at Cable Hut to-night for bearings from ship, and a Morse signal lamp for use at Hut if necessary.
6.35	Commenced joint between Pernambuco End (Light Deep Sea, No. 2083, Sec. "9," ) and cable in fore tank (also Light Deep Sea, No. 2083, Sec. "9"). 13 fms.=0.013 N.M. cut off Pernambuco End for this joint and splice, thus reducing the length of CABLE LAID FROM PERNAMBUCO HUT TO THIS SPLICE TO 342.667 N.M.
7.17	Joint placed in the curing stove.
8.0	Light ESE breeze. Fine and clear. Slight SE sea and swell. Bar. 30.100 (79° F.). Temp. 78°·3 F. dry, 73° F. wet. Sea surface 78°·3 F.
8.40	Steam-launch with dingey in tow returned from Cable Hut, bringing results of Mr. Dixon's tests on Fernando Noronha End of cable. Mr. Dixon reports that his tests showed cable making "earth" at about 4½ N.M. from Hut on the afternoon of the 7th inst., from which it appears that some damage may have occurred to the cable when buoying it.
10.20	Joint between Pernambuco End and end of cable in fore tank finished.
10.55	Tests on joint satisfactory. Commenced splice.
MIDNT	Moderate E'ly wind. Fine, but cloudy. Slight swell. Bar. 30.154 (80° F.). Temp. 77°·2 F. dry, 73°·5 F. wet. Sea surface 77°·6 F.



S.S. "SILVERTOWN."

Hour.  
A.M.

Picking up on Fernando End—*contd.*

SUNDAY, AUGUST 14TH, 1892.

- 0.7 Splice between Pernambuco End and cable in fore tank finished. Set about preparing to pay out on Pernambuco End (Light Deep Sea from fore tank) with starboard picking-up drum over starboard bow sheave, and to pick up on Fernando Noronha End (Heavy Deep Sea, No. 2143, part Sec. "2") with port picking-up drum.
- 0.28 Took stoppers off both cables on bow baulks and commenced to pick up on Fernando Noronha End, paying out on Pernambuco End according to strain with brake gear.
- 0.29 Fernando Noronha End on drum. Coiling cable down on main deck.
- 0.42 Damaged place in cable came inboard, core exposed.  
0.062 N.M. of Heavy Deep Sea, picked up on Fernando Noronha End.  
Cut cable to clear this damaged place out and resumed tests, which place fault still outboard.
- 0.44 SPLICE between Pernambuco End and cable in fore tank (made at 0.7 a.m.), passed off starboard picking-up drum.  
Position { Lat.  $3^{\circ} 47' 8''$  S.  
of splice { Long.  $32^{\circ} 28' 6''$  W.
- 0.48 Cable on Fernando Noronha End coming inboard in good condition.
- 1.0 Strain on Fernando Noronha End varying from 0 to 3.2 tons. Moving ship's engines and helm as required to clear cable from bottom. Peak bearing  $S 49\frac{3}{4}^{\circ}$  E, Cape Placelière bearing  $S 7\frac{3}{4}^{\circ}$  W.
- 1.8 Picking up on Fernando Noronha End with difficulty, owing to its being foul on bottom.
- 1.11 Damaged place in cable came inboard, wires stripped of serving and flattened.  
0.316 N.M. of Heavy Deep Sea picked up on Fernando Noronha End.
- 1.25 Paying out and picking up as required to clear cable, on Fernando Noronha End, from bottom, where it appears to be foul of rocks. Strain = 0 to  $3\frac{1}{2}$  tons.

*Laying the Pernambuco—Fernando Noronha Section.*

S.S. "SILVERTOWN."

Hour.  
A.M.

**Picking up on Fernando End—*contd.***

SUNDAY, AUGUST 14TH, 1892—*contd.*

- 1.30 Peak bearing S  $48\frac{3}{4}^{\circ}$  E. Cape Placelière bearing S  $8\frac{3}{4}^{\circ}$  E.
- 1.40 Strain on Fernando Noronha End 0 to  $4\frac{1}{2}$  tons. Picking up on cable with difficulty.  
Paying out cable from fore tank on Pernambuco End according to strain.
- 1.47 Cable now coming in with sheathing wires flattened in places, caused by clearing cable from bottom.  
0.455 N.M. of Heavy Deep Sea picked up on Fernando Noronha End.
- 1.58 2 kinks tightly drawn came inboard, about 27 fms. apart.  
0.671 N.M. of Heavy Deep Sea picked up on Fernando Noronha End.
- 2.0 Fernando Noronha cable now coming inboard in good condition and free of strain.
- 2.13 Several bad kinks came inboard in the last 100 fms. picked up on Fernando Noronha End.  
1.011 N.M. of Heavy Deep Sea picked up on Fernando Noronha End.
- 2.30 Cable now coming inboard much damaged and kinky, and with some difficulty, owing to strain.
- 2.35 Stopped picking up on Fernando Noronha End. Strain = 0 to 3.4 tons.  
1.132 N.M. of Heavy Deep Sea picked up on Fernando Noronha End. Cable cut on main deck at some of the worst kinks. Some of the kinks are very bad, the rubber core being much flattened and split, with the conductor exposed.  
Peak bearing S  $47^{\circ}$  E. Cape Placelière bearing S  $15^{\circ}$  W.
- 2.55 Resumed picking up on Fernando Noronha End, as cable reported still faulty, and no signals can be got from Hut.
- 3.0 Cable coming inboard full of tightly-drawn kinks, caused by drawing slack from the bottom.



S.S. "SILVERTOWN."

Hour.  
A.M.

**Picking up on Fernando End—*contd.***

SUNDAY, AUGUST 14TH, 1892—*contd.*

3.5 SPLICE between Heavy Deep Sea, No. 2143, pt. Sec. "2," and Light Intermediate, No. 2144, pt. Sec. "2A," laid out on Fernando Noronha End on the 7th inst., came inboard and on to drum.

1:315 N.M. of Heavy Deep Sea, No. 2143, pt. Sec. "2," picked up on Fernando Noronha End by port picking-up drum + 5 fms. cut off Fernando Noronha End at 4.35 p.m. yesterday = 1:320 N.M. picked up; which is 15 fms. in excess of the length laid on the 7th inst., viz.: 1:305 N.M. Stopped picking up on Fernando Noronha End, and bent on stoppers

3.10 Peak bearing S 46° E. Cape Placelière S 18 W.

**Final Splice off Fernando.**

3.16 Commenced to open out the splice just picked up so as to cut cable at joint.

Stopped paying out on Pernambuco End from fore tank.

0:505 N.M. of Light Deep Sea paid out on Pernambuco End from fore tank since midnight.

3.35 Cut Fernando Noronha End at the joint of the Heavy Deep Sea and Light Intermediate splice, and attached lead from testing room.

3.50 Tests on Fernando Noronha End still unsatisfactory. No signals to be got from Hut.

3.58 Cut the sheathing wires of the splice between Heavy Deep Sea and Light Intermediate types off Fernando Noronha End (Light Intermediate type).

Resumed paying out on Pernambuco End as necessary.

4.0 Moderate E'ly breeze. Fine, but cloudy.

Bar. 30.100 (78° F.). Temp. 76.6° F. dry, 73° F. wet. Sea surface 78° F.

4.27 Several kinks in Light Intermediate on Fernando Noronha End have come inboard in the last  $\frac{1}{4}$  N.M. picked up.

0:287 N.M. of Light Intermediate, No. 2144, pt. Sec. "2A," on Fernando Noronha End, picked up. Strain varying from 0 to 2.8 tons. Cable cut at various kinks.

*Laying the Pernambuco—Fernando Noronha Section.*

S.S. "SILVERTOWN."

Hour.	Final Splice off Fernando— <i>contd.</i>
A.M.	SUNDAY, AUGUST 14TH, 1892— <i>contd.</i>
4.30	Strain on Fernando Noronha End varying from 0 to 5 tons. Picking up and paying out on cable and moving ship's engines and helm as necessary, to clear cable of the rocky bottom.
4.36	Strain on Fernando Noronha End dropped suddenly from $5\frac{1}{2}$ tons to zero.
4.42	Kink in cable came inboard. 0.397 N.M. of Light Intermediate picked up.
5.5	0.557 N.M. of Light Intermediate picked up.
5.12	Tests on Fernando Noronha End still unsatisfactory.
5.24	Two bad kinks came inboard. 0.746 N.M. of Light Intermediate on Fernando Noronha End picked up.
5.28	Stopped picking up on Fernando Noronha End and cut cable at last kink inboard.
5.44	Fernando Noronha Hut now answered call on Morse.
5.45	Peak bears S 43° E; 2.6 N.M. distant.
5.55	Tests on Fernando Noronha End satisfactory. Set about bending on slip ropes and stoppers on both the Fernando Noronha and Pernambuco cables on bow baulks.
6.49	'Tests on Pernambuco End and on the Fernando Noronha End now perfectly satisfactory. Cables handed over for final joint and splice.
6.50	Cut Pernambuco End close to starboard picking-up drum and commenced to open it out for splice with Fernando Noronha End. 7 fms. on the Pernambuco End expended for this splice.
	Light Deep Sea, No. 2083, pt. Sec. "9,"
	paid out while picking up on Fernando
	End .. .. = 0.951 N.M.
	Cut off for final splice with Fernando
	End .. .. = 0.007 "
	Laid by starboard picking-up Drum
	measurement .. .. = 0.944 "
	Length by Factory measurement .. .. = 0.976 "
	Difference = 0.032 N.M.

S.S. "SILVERTOWN."

Hour.	Final Splice off Fernando—contd.
A.M.	SUNDAY, AUGUST 14TH, 1892—contd.
	TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM PERNAMBUCO HUT TO THIS SPLICE = 343·643 N.M.
	CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE (VARIOUS)=0·976 N.M.
6.53	Cut Fernando Noronha End (L. I. type), close to port picking-up drum, and commenced to open it out for final splice with Pernambuco End.
	Cable picked up on Fernando Noronha End:—
	Heavy Deep Sea, No. 2143, pt. Sec. "2" = 1·305 N.M.
	Light Intermediate, No. 2144, pt.
	Sec. "2A" .. .. = 0·771 ,,
	<hr/> 2·076 N.M.
	TOTAL CABLE NOW REMAINING ON FERNANDO NORONHA END = 3·202 N.M., VIZ. :—
	Shore-End, No. 2146, pt. Sec. "3" = 1·493 N.M.
	Heavy Int., ,, 2145, ,, ,, "4A" = 0·990 ,,
	Light ,, ,, 2144, ,, ,, "2A" = 0·719 ,,
	<hr/> Total .. 3·202 N.M. <hr/>
	NOTE.—As some considerable amount of slack was necessarily paid out on the latter part of the cable laid out from Fernando Noronha Hut on the afternoon of the 7th inst., owing to the water deepening rapidly, it follows that many of the kinks in the 2·076 N.M. length picked up this morning have been caused by ship in picking up.
7.10	Commenced joint between Pernambuco End (Light Deep Sea cable, No. 2083, Sec. "9," ex fore tank) and Fernando Noronha End (Light Intermediate cable, No. 2144, pt. Sec. "2A," ex after tank).
	<b>Slipping Final Bight off Fernando Noronha.</b>
7.20	Sounding { Lat. 3° 48'·3 S } 233 fms. Lost sinker. 132 S { Long. 32° 27'·3 W } Peak bearing S 44½° E, 2·6 N.M. distant.
7.55	Joint placed in the curing stove.

*Laying the Pernambuco—Fernando Noronha Section.*

S.S. "SILVERTOWN."

Hour. A.M.	Slipping Final Bight off Fernando Noronha— <i>contd.</i>
	SUNDAY, AUGUST 14TH, 1892— <i>contd.</i>
8.0	Moderate E'ly breeze. Fine and clear, with passing clouds. Slight sea and swell. Bar. 30.110 (78° F.). Temp. 77°·3 F. dry, 74° F. wet. Sea surface, 78° F.
9.45	Mr. E. March Webb left in steam-launch with dingey in tow for Cable Hut, for the purpose of taking tests on the Pernambuco—Fernando Noronha Section as soon as the joint of the final splice is finished on board. If the section tests satisfactorily a "C" flag will be hoisted at the Hut as a signal to ship that final splice may be dropped, otherwise a red flag will be hoisted at Hut.
11.8	Joint between Pernambuco and Fernando Noronha Ends finished.
11.21	Commenced final splice.
11.40	Observed "C" flag flying at Cable Hut.
11.50	Final splice of the Pernambuco—Fernando Noronha Section completed. Set about slipping the bight.
NOON.	Moderate E'ly breeze. Fine and clear. Bar. 30.130 (79° F.). Temp. 78° F. dry, 73°·8 F. wet. Sea surface 78°·7 F.
P.M. 0.5	Slipped final splice of the Pernambuco—Fernando Noronha Section successfully. Position { Lat. 3° 48'·3 S. of splice { Long. 32° 27'·3 W. Peak bearing S 43½° E, 2·6 N.M. distant.

Laying the Pernambuco—Fernando Noronha Section.

S.S. "SILVERTOWN."

Hour.

Slipping Final Bight off Fernando Noronha—*contd.*

P.M.

SUNDAY, AUGUST 14TH, 1892—*contd.*

SUMMARY OF CABLE IN THE PERNAMBUCO—  
FERNANDO NORONHA SECTION.

PERNAMBUCO—

Shore-End, No. 2146, pt. Sec. "3" =	3·998 N.M.	} Indiarubber Core.
" No. 2146, pt. Sec. "3" =	2·992 "	
Heavy Int., No. 2145, pt. Sec. "4A" =	6·990 "	
Light Int., No. 2144, pt. Sec. "2A" =	14·990 "	
Heavy Deep Sea, No. 2143, pt. Sec. "2" .. .. =	17·986 "	
Light Deep Sea, No. 2083, Sec. "11" .. .. =	124·366 "	
Light Deep Sea, No. 2083, pt. Sec. "9" .. .. =	171·345 "	
Light Deep Sea, No. 2083, pt. Sec. "9" .. .. =	0·976 "	
Heavy Deep Sea, No. 2143, pt. Sec. "2" .. .. =	— "	
—————→	Final Splice	
Light Int., No. 2144, pt. Sec. "2A" =	0·719 N.M.	
Heavy Int., No. 2145, pt. Sec. "4A" =	0·990 "	
F. NORONHA—		
Shore-End, No. 2146, pt. Sec. "3" =	1·493 "	

Total length = 346·845 N.M.

0.3

Set on for anchorage off the Citadel of the island of Fernando de Noronha.



AT FERNANDO NORONHA.

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STEAMING TO PERNAMBUCO.

---

AT PERNAMBUCO.

---

DETAILS OF CABLE PICKED UP OFF  
FERNANDO.

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EXPENDITURE TABLE OF CABLE PICKED UP.

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S.S. "SILVERTOWN."

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AUGUST 14TH TO AUGUST 17TH, 1892.

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# STEAMING FROM FERNANDO NORONHA TO PERNAMBUCO.

S.S. "SILVERTOWN."

Hour.

SUNDAY, AUGUST 14TH, 1892—*contd.*

P.M.

- |      |  |
|------|--|
| 1.8  | <p>Let go port anchor in <math>10\frac{1}{2}</math> fms. off the town of Fernando Noronha.</p> <p>Draught of ship { Forward 22'·0".<br/>                          Aft 27'·0".</p> <p>Messrs. E. March Webb and T. E. Rymer-Jones returned from Cable Hut. Mr. Webb reports that Mr. J. Rymer-Jones at Pernambuco Cable Hut has tested the completed Pernambuco—Fernando Noronha Section, with very satisfactory results.</p> |
| 2.35 | <p>Messrs. R. K. Gray, E. March Webb, R. E. Peake, and W. Bent left for Cable Hut to take further tests on the Fernando Noronha—Pernambuco Section.</p>  |
| 6.0  | <p>Messrs. R. K. Gray, Webb, Peake, and Bent returned to ship, accompanied by Lieutenant Lucena (the Assistant Director of the Island), Major Melho Filho, Lieut. Bello, and staff.</p>  |
| 7.52 | <p>Messrs. Peake, Bent, Dixon, and Anstruther left for Cable Hut to resume tests on the Pernambuco—Fernando Noronha Section.</p>   |
| 8.0  | <p>Moderate E'ly breeze. Fine and clear.</p> <p>Bar. 30·120 (78° F.). Temp. 77°·9 F. dry, 73°·2 F. wet. Sea surface 77°·6 F.</p>   |
| 9.15 | <p>Mr. H. B. Forde, with the visitors, left ship for shore.</p> <p>Mr. H. B. Forde remains ashore to take tests on the Pernambuco—Fernando Noronha Section during the five days' guarantee, while ship is away south at Pernambuco and Bahia for coal, &amp;c.</p>   |

*Steaming from Fernando Noronha to Pernambuco.*

S.S. "SILVERTOWN."

Hour.

SUNDAY, AUGUST 14TH, 1892—*contd.*

MIDNT.

Light E'ly wind. Fine, but cloudy, with passing showers of rain.

The following telegram was sent this evening—"R. K. Gray to Mr. Bailey, Pernambuco. Tell Keiller that the 'Silvertown' will arrive at Pernambuco on Wednesday morning next, and will require 100 tons of very best coals sent alongside in sacks. Quick dispatch, as vessel should leave for Bahia same afternoon."

Mr. R. E. Peake also sent a telegram to Messrs. Clark, Forde, and Taylor (London) advising them of the satisfactory completion of the Pernambuco—Fernando Noronha Section, and asking them to advise Silvergray of the same.

Congratulatory telegrams were also sent to the Governor of the State of Pernambuco, to the Director-General of Telegraphs at Pernambuco, and to the British, French, and Spanish Ministers in Rio Janeiro.

Mr. R. K. Gray has arranged with the Director of Fernando Noronha for the opening out of a trench for land-line cable from the Cable Hut to the "Secretaria," or Government offices, in which the South American Cable Company will be given the necessary accommodation for an office.

MONDAY, AUGUST 15TH, 1892.

A.M.

0.45

Messrs. Peake and Bent returned from Cable Hut, having tested the Fernando Noronha—Pernambuco Section, with satisfactory results.

4.0

Fresh SE breeze. Overcast and squally.

6.35

Weighted anchor and set on for Pernambuco.

8.0

Fresh SE breeze. Fine, but cloudy. Moderate SE swell. Bar. 30.130 (78° F.). Temp. 77°·2 F. dry, 72°·3 F. wet. Sea surface 78°·5 F.

11.0

The cable hands commenced overhauling the pieces of Light Intermediate and Heavy Deep Sea cable picked up yesterday. All the kinks are to be cut out, and the pieces of cable which appear good and test satisfactorily are to be made up into coils, and labelled in consecutive order with the length and weight of each piece specified. These coils of cable will eventually be landed at Pernambuco or Fernando Noronha for land-line purposes.

*Steaming from Fernando Noronha to Pernambuco.*

S.S. "SILVERTOWN."

Hour.

MONDAY, AUGUST 15TH, 1892—*contd.*

NOON.

Moderate SE by S wind. Fine and clear.  
Bar. 30·130 (80° F.). Temp. 78°·4 F. dry, 73°·5 F. wet.  
Sea surface 78°·8 F.  
Position by { Lat. 4° 12'·4 S.  
observations { Long. 32° 42'·0 W.  
Peak of Fernando Noronha bearing N 36° E, 28 N.M. distant.

P.M.

8.0

Fresh S by E wind. Fine and clear. Moderate sea and swell.  
Bar. 30·100 (78° F.). Temp. 79°·2 F. dry, 72°·6 F. wet.  
Sea surface 78° F.

TUESDAY, AUGUST 16TH, 1892.

A.M.

5.34

Position { Lat. 5° 58°·3 S.  
by stars { Long. 33° 28°·0 W.  
Current observed since noon yesterday = N 38° E, 4·7 N.M.  
= 0·27 kt.

8.0

Fresh SSE breeze. Overcast and squally, with rain. Moderate sea.  
Bar. 30·110 (75° F.) Temp. 74°·5 F. dry, 72° F. wet.  
Sea surface 77°·6 F.

NOON.

Strong SE by E wind Fine clear weather. Moderate sea.  
Bar. 30·120 (79° F.). Temp. 78°·5 F. dry, 72°·8 F. wet.  
Sea surface 78°·4 F.  
Position by { Lat. 6° 39'·7 S.  
observations { Long. 33° 51'·9 W.  
Current observed since 5.34 a.m. = S 78° W, 6·0 N.M. = 0·92 kt.  
Distance run since noon yesterday = 164 N.M.

P.M.

1.0

Cable hands finished overhauling the pieces of cable picked up on the morning of the 14th inst., and the following pieces were found to be suitable for land-line purposes, both mechanically and electrically:—

*Steaming from Fernando Noronha to Pernambuco.*

S.S. "SILVERTOWN."

Hour.

TUESDAY, AUGUST 16TH, 1892—*contd.*

Particulars of cable picked up off Fernando.

HEAVY DEEP SEA TYPE, No. 2143, pt. Sec. "2."				LIGHT INTERMEDIATE TYPE. No. 2144, pt. Sec. "2A."			
Piece labelled 7A= 55 yds. in length				Piece labelled 1C=674 yds. in length			
"	"	8B=103	" "	"	"	2B=216	" "
"	"	9B=136	" "	"	"	3B=214	" "
"	"	10A= 60	" "	"	"	4A=79	" "
"	"	11A= 60	" "	"	"	5B=145	" "
"	"	12C=573	" "	"	"	6B=131	" "
"	"	13A= 68	" "				
"	"	14C=648	" "				
"	"	15C=510	" "				
"	"	16A=120	" "				
Good cable =2333				Good cable =1459			
Damaged cable				Damaged cable			
put overb'd = 306				put overb'd = 85			
Total =2639				Total =1544			

- (A.) Spliced up into one length=421 yds. (21 yds. expended for splice). Landed at Fernando Noronha.
- (B.) Spliced up into one length=920 yds. (25 yds. expended for splice). Landed at Fernando Noronha 31.8.92.
- (C.) Landed at Pernambuco=2405 yds.=1.185 N.M.

EXPENDITURE ACCOUNT OF THE CABLE PICKED UP ON  
14TH INST.

L.I., No. 2144.				H.D.S., No. 2143.			
Damaged and abandoned cable ..				0.052 N.M. ..			
Expended for splices (15 yds.) ..				0.008 .. (31 yds.)..			
Landed at Pernambuco (674 yds.)				0.322 .. (1731 yds.)			
" Fernando Noronha							
(770 yds.) ..				0.379 .. (571 yds.)..			
Total ..				0.771 N.M. Total 1.305 N.M.			

P.M.  
8.0

Fresh SE by E wind. Fine, but cloudy. Moderate SE sea and swell. Ship rolling considerably.  
Bar. 30.105 (78° F.). Temp. 78° 3 F. dry, 72° F. wet.  
Sea surface 77° 6 F.

S.S. "SILVERTOWN."

Hour.

**At Pernambuco.**

WEDNESDAY, AUGUST 17<sup>TH</sup>, 1892.

A.M.	
2.20	Sighted Olinda Light.
3.55	Olinda Light abeam. Current observed since noon yesterday = N 54° W, 10.7 N.M. = 0.8 kt.
6.0	Let go anchor in 7 fms. of water off the Reef Lighthouse at Pernambuco.
6.55	Mr. G. H. Bailey, of the South American Cable Company, and Mr. R. Jones, of Messrs. Wilson, Sons, & Co., came on board, Mr. Bailey bringing on board a number of letters, amongst which is a reply from the Governor of the State of Pernambuco to the congratulatory telegram sent from Fernando Noronha on the evening of the 14th inst.
7.15	Draught { Forward 22' 0". of ship { Aft 26' 8".
8.0	Light variable wind. Fine clear weather. Bar. 30.150 (73° F.). Temp. 70.5° dry, 68.5° F. wet. Sea surface 76° F.
9.10	Lighter containing coal came alongside.
9.15	Commenced shipping coal in bunkers.
10.0	Mr. R. K. Gray leaves ship to go to Rio Janeiro by next mail. Mr. R. E. Peake will remain in Pernambuco to take tests on the Pernambuco—Fernando Noronha Section during the remainder of the five days' guarantee while ship is away for coal at Bahia, and Mr. F. H. Morland leaves ship for duty at the South American Cable Company's office in Pernambuco.
10.25	The first coal lighter emptied.
11.55	Put four of the coils (Nos. 1, 12, 14, and 15) of picked up cable, equal to 2405 yards in all, into the empty coal lighter to be landed for spare land-line cable.
NOON.	Moderate S'y breeze. Fine and clear. Moderate swell in the anchorage. Bar. 30.174 (77° F.). Temp. 76.2° F. dry, 71.4° F. wet surface 77.2° F.

*Steaming from Fernando Noronha to Pernambuco.*

S.S. "SILVERTOWN."

HOUR.	At Pernambuco— <i>contd.</i>
<b>WEDNESDAY, AUGUST 17<sup>TH</sup>, 1892—<i>contd.</i></b>	
NOON.	Ran a quantity of water into main tank, sufficient to almost cover the cable.
P.M.	
0.10	Coal lighter, containing the four coils of land-line cable, left ship.
0.34	Molt (jointer), with Buckmaster and Campbell (cable hands), left for shore to make the joints in the land-line cables between Cable Hut and the South American Cable Company's office in Pernambuco, while ship is away south.
0.47	Another lighter with coal came alongside. Resumed shipping coal in bunkers.
5.0	Finished shipping coal. 122 tons of coal shipped in bunkers to-day, making a total of 360 tons on board.
5.43	Messrs. Keiller and Jones, of Messrs. Wilson's, left ship, Mr. Anderson, of Messrs. Wilson's, came on board for passage to Bahia.

STEAMING TO BAHIA.

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AT BAHIA.

---

COALING.

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S.S. "SILVERTOWN."

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AUGUST 17<sup>TH</sup> TO AUGUST 24<sup>TH</sup>, 1892.

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# STEAMING FROM PERNAMBUCO TO BAHIA.

## S.S. "SILVERTOWN."

Hour.  
P.M.

WEDNESDAY, AUGUST 17TH, 1892—*contd.*

6.0

Weighed anchor and set on for Bahia.

Draught { Forward 22' 0".  
of ship { Aft 27' 6".

The following telegram was sent this afternoon:—"Anglicus, Bahia. Silvertown arrives Saturday daylight; requires about one thousand tons coal quick dispatch. Benest."

8.0

Moderate S'ly breeze. Overcast and cloudy, with passing showers of rain.

Bar. 30.130 (76° F.). Temp. 75°·3 F. dry, 71° F. wet. Sea surface 77° F.

9.28

Cape Agostinho Lighthouse abeam, bearing N 83° W, 7½ N.M. distant.

Pumped a little of the water out of main tank, as ship rolling a little.

THURSDAY, AUGUST 18TH, 1892.

A.M.

8.0

Moderate SSE breeze. Overcast and squally, with rain.

Bar. 30.170 (76° F.). Temp. 74°·6 F. dry, 73°·5 F. wet. Sea surface 76°·5 F.

NOON.

Moderate ESE breeze. Overcast and squally, with thick rainy weather. Slight sea.

Bar. 30.185 (75° F.). Temp. 75°·5 F. dry, 73° F. wet. Sea surface 76°·5 F.

Position { Lat. 9° 48'·7 S.  
by D. R. { Long. 35° 31'·2 W.

Distance run since 6 p.m. yesterday = 121 N.M.

P.M.

8.0

Light unsteady ESE breeze. Overcast and squally, with continual rain all day.

Bar. 30.185 (74° F.). Temp. 73°·8 F. dry, 71°·5 F. wet. Sea surface 76°·2 F.

8.20

Took flying sounding in 18 fms., coral bottom.

*Steaming from Pernambuco to Bahia.*

S.S. "SILVERTOWN."

Hour.	
	FRIDAY, AUGUST 19 <sup>TH</sup> , 1892.
A.M.	
4.0	Light ESE breeze. Overcast, with rain.
8.0	Light ESE breeze. Fine, but cloudy. Weather clearing. Slight sea and swell from SE. Bar. 30.220 (75° F.). Temp. 75° F. dry, 71.8° F. wet. Sea surface 75° F.
9.0	The cable hands commenced jointing and splicing together pieces 4, 10, 11, 13, and 7 of the cable picked up on the 14th inst., and now in coils on main deck.
10.0	Sighted land on starboard beam.
NOON.	Moderate E'ly breeze. Fine and clear. Bar. 30.250 (78° F.). Temp. 78.8° F. dry, 73.3° F. wet. Sea surface 76.8° F. Position by { Lat. 11° 53' 6 S. observations { Long. 37° 17' 7 W. Current observed since 9.28 p.m. on 17th inst.=N 17° E, 11.3 N.M.=0.29 KT. Distance run since noon yesterday=161 N.M.
P.M.	
6.34	Position { Lat. 12° 28' 2 S. by stars { Long. 37° 48' 0 W. Current observed since noon=N 22° W, 3.9 N.M.=0.6 KT.
8.0	Moderate SE breeze. Fine and clear. Bar. 30.225 (75° F.). Temp. 75.5° F. dry, 71° F. wet. Sea surface 75° F.
8.30	Finished splicing the pieces of picked-up cable together, <i>i.e.</i> , No. 4 spliced on to No. 10, No. 10 spliced on to No. 11, No. 11 spliced on to No. 13, and No. 13 spliced on to No. 7. Two fms. of cable expended for each splice, making the total length of the five pieces now spliced together 306 yards. This piece will be landed at Fernando Noronha for spare land-line cable, together with the seven remaining pieces, making a total of 1371 yards.
11.12	Sighted Itapuan Light bearing S 64° W.
MIDNT.	Light SE breeze. Fine and clear.

*Steaming from Pernambuco to Bahia.*

S.S. "SILVERTOWN."

Hour. A.M.	Coaling.
	SATURDAY, AUGUST 20TH, 1892.
1.11	Itapuan Light abeam, bearing N 46° W, 6½ N.M. distant. San Antonio Light bearing S 87° W. Current observed since 6.34 p.m. yesterday = N 63° E, 6.2 N.M. = 0.9 KT.
2.50	San Antonio Light abeam, bearing N 33° W, 8½ N.M. distant.
3.0	Commenced to run water into after cable tank to thoroughly cover cable.
3.15	Slowed ship's engines.
4.5	Finished running water into after tank; cable in the tank well covered with water. Commenced to run water into main cable tank.
4.55	Finished running water into main tank; cable in the tank well covered with water.
7.24	Let go starboard anchor in 6½ fms. of water, at the coaling anchorage, Bahia.
7.26	Received pratique. Draught { Forward 21' 0". of ship { Aft 29' 0".
7.40	Mr. J. M. Florence, of Messrs. Wilson, Sons, & Co., and Mr. W. S. Robertson, of the Western and Brazilian Telegraph Company, came on board.
8.0	Calm. Fine and clear. Bar. 30.230 (78° F.). Temp. 75°·6 F. dry, 72° F. wet. Sea surface 75°·8 F. Temp. in cable tanks: fore tank 78° F., main tank 78° F., after tank 79° F.
9.16	Lighters with coal came alongside.
9.33	Commenced shipping coal in bunkers and fore hold.
10.40	Customs Officer came on board, and gave orders to cease coaling, as ship should have taken up a berth in the man-of-war anchorage. Stopped coaling.
10.45	Customs Officer left ship.
11.27	Received permission to take in coals at this anchorage. Resumed shipping coal.

*Steaming from Pernambuco to Bahia.*

S.S. "SILVERTOWN."

Hour.	Coaling— <i>contd.</i>
A.M.	
	SATURDAY, AUGUST 20TH, 1892— <i>contd.</i>
NOON.	Light SSE breeze. Fine and clear. Bar. 30·220 (78° F.). Temp. 80°·3 F. dry, 73° F. wet. Sea surface 76°·8 F.
P.M.	
0.48	Only about 6 or 8 tons of coal have been shipped in fore hold to-day, owing to the men being required to work coal in the bunkers. Shipping stores this afternoon.
8.0	Light SE breeze. Fine, but cloudy. Bar. 30·200 (76° F.). Temp. 76°·6 F. dry, 71°·3 F. wet. Sea surface 75°·3 F.
MIDNT.	Similar weather. Coaling ship all night.
	SUNDAY, AUGUST 21ST, 1892.
A.M.	
3.10	Stopped coaling for men to rest.
5.55	Resumed shipping coal in fore hold.
6.28	" " " bunkers
8.0	Calm. Fine, but cloudy. Bar. 30·210 (75° F.). Temp. 74°·3 F. dry, 72°·1 F. wet. Sea surface 75° F. Temp. in cable tanks: fore tank 79° F., main tank 78½° F., after tank 79½° F.
8.45	Draught { Forward 22' 3". of ship { Aft 31'.
NOON.	Calm. Fine, but cloudy. Close sultry weather. Bar. 30·226 (76° F.). Temp. 74°·8 F. dry, 71°·8 F. wet. Sea surface 75°·8 F.
P.M.	
2.30	Finished shipping coal in bunkers; 610 tons shipped in bunkers since 9.30 a.m. yesterday.
8.0	Calm. Fine and clear. Bar. 30·135 (76° F.). Temp. 76°·8 F. dry, 71°·3 F. wet. Sea surface 75°·3 F.

*Steaming from Pernambuco to Bahia.*

S.S. "SILVERTOWN."

Hour.  
P.M.

Coaling—*contd.*

SUNDAY, AUGUST 21<sup>ST</sup>, 1892—*contd.*

11.15 Finished shipping coal. Total amount of coal shipped since 9.30 a.m. yesterday=950 tons, viz., 610 tons in bunkers and 340 tons in fore hold. Total amount of coal now on board=1190 tons, viz., 710 tons in bunkers and 480 tons in fore hold.

MIDNT. Calm. Fine, bright and clear.

MONDAY, AUGUST 22<sup>ND</sup>, 1892.

A.M.  
8.0

Light ESE breeze. Fine, but cloudy.  
Bar. 30·215 (75° F.). Temp. 73°·5 F. dry, 70°·6 F. wet. Sea surface 74°·9 F.  
Draught { Forward 24' 0".  
of ship { Aft 30' 7".

NOON.

Moderate ESE breeze. Fine and clear.  
Bar. 30·295 (77° F.). Temp. 75°·5 F. dry, 71°·3 F. wet. Sea surface 76° F.  
Temp. in cable tanks : fore tank 79° F., main tank 78½° F., after tank 79½° F.

During the day the final official tests have been taken on all cable in main and after tanks by Mr. Bent (preparatory to laying the Fernando Noronha—Senegal Section), with very satisfactory results.

P.M.  
8.0

Light SE airs. Fine and clear.  
Bar. 30·235 (75° F.). Temp. 73°·8 F. dry, 68°·3 F. wet. Sea surface 75° F.

MIDNT.

Light SE airs and calms. Fine clear weather.

TUESDAY, AUGUST 23<sup>RD</sup>, 1892.

A.M.  
8.0

Light ESE airs to calms. Fine and clear.  
Bar. 30·250 (74° F.). Temp. 75°·2 F. dry, 70° F. wet. Sea surface 75° F.  
Draught { Forward 23' 10".  
of ship { Aft 30' 11".

NOON.

Light SSE wind. Fine and clear.  
Bar. 30·250 (77° F.). Temp. 78°·4 F. dry, 71°·4 F. wet. Sea surface 75°·5 F.

*Steaming from Pernambuco to Bahia.*

S.S. "SILVERTOWN."

Hour.

Coaling—*contd.*

P.M.

TUESDAY, AUGUST 23<sup>RD</sup>, 1892—*contd.*

8.0

Light SE airs. Fine and clear.

Bar. 30·175 (74° F.). Temp. 78°·5 F. dry, 72° F. wet. Sea surface 75° F.

Cable hands and crew engaged during day in clearing up and getting all gear ready.

WEDNESDAY, AUGUST 24<sup>TH</sup>, 1892.

A.M.

8.0

Calm. Fine, bright, and clear weather.

Bar. 30·195 (73° F.). Temp. 72° F. dry, 69°·8 F. wet. Sea surface 75°·5 F.

NOON.

Light W'y breeze. Fine and clear.

Bar. 30·193 (75° F.). Temp. 74°·3 F. dry, 70°·4 F. wet. Sea surface 76° F.

Temp. in cable tanks not taken, hatches covered up.

P.M.

1.45

Mr. Anderson, of Messrs. Wilson, Sons, & Co., rejoined ship for passage back to Pernambuco.

STEAMING TO PERNAMBUCO.

AT PERNAMBUCO.

STEAMING TO FERNANDO NORONHA.

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S.S. "SILVERTOWN."

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AUGUST 24TH TO AUGUST 29TH, 1892.





# STEAMING FROM BAHIA TO PERNAMBUCO.

## S.S. "SILVERTOWN."

Hour.	WEDNESDAY, AUGUST 24TH, 1892— <i>contd.</i>
P.M.	
2.55	Weighed anchor and set on for Pernambuco.
3.10	Commenced to pump water out of main cable tank, to bring water well below top flake.
3.55	Finished pumping out main tank and commenced to pump water out of after cable tank.
4.55	Finished pumping out after tank, water about a foot below top flake.
6.0	Itapuan Lighthouse bearing N 35° W, and San Antonio Lighthouse bearing N 62° W.
6.58	Itapuan Lighthouse abeam, bearing N 30° W, 2.9 N.M. distant.
8.0	Light E'ly breeze. Fine and clear. Bar. 30.105 (76° F.). Temp. 75°·3 F. dry, 71° F. wet. Sea surface 75°·8 F.

## THURSDAY, AUGUST 25TH, 1892.

A.M.	
8.0	Light NE by E breeze Fine and clear Bar. 30.165 (76° F.). Temp. 76°·2 F. dry, 70°·2 F. wet. Sea surface 76°·5° F.
NOON.	Light ENE breeze. Fine and clear. Bar. 30.210 (79° F.). Temp. 77°·5 F. dry, 71°·8 F. wet. Sea surface 77°·5° F. Position by { Lat. 11° 35'·2 S. observations { Long. 36° 57'·6 W. Current observed since 6.58 p.m. yesterday = N 31° E, 8.3 N.M. = 0.5 KT. Distance run since 6.58 p.m. yesterday = 114 N.M.

*Steaming from Bahia to Pernambuco.*

S.S. "SILVERTOWN."

Hour.  
P.M.

THURSDAY, AUGUST 25TH, 1892—*contd.*

- 0.25 Commenced to run water into after tank to cover the cable on the after side of tank.
- 0.40 Finished running water into after tank, and placed the coil of the bottom end of the cable in the tank in the water on the after side of tank.
- 6.7 Position { Lat.  $11^{\circ} 0' 6''$  S.  
by stars { Long.  $36^{\circ} 30' 1''$  W.  
Current observed since noon = N  $7^{\circ}$  W, 4.1 N.M. = 0.7 KT.
- 8.0 Moderate ESE breeze. Fine and clear. Slight sea from E.  
Bar  $30.135$  ( $76^{\circ}$  F.). Temp.  $75.8^{\circ}$  F. dry,  $72.3^{\circ}$  F. wet.  
Sea surface  $76.5^{\circ}$  F.

FRIDAY, AUGUST 26TH, 1892.

A.M.

- 5.40 Position { Lat.  $9^{\circ} 57' 9''$  S.  
by stars { Long.  $35^{\circ} 27' 5''$  W.  
Current observed since 6.7 p.m. yesterday = N  $58^{\circ}$  E, 24.0 N.M. = 2.0 KTS.

- 8.0 Moderate ENE breeze. Fine and clear. Slight sea from E'd.  
Bar.  $30.200$  ( $77^{\circ}$  F.). Temp.  $76.8^{\circ}$  F. dry,  $73^{\circ}$  F. wet. Sea surface  $76.6^{\circ}$  F.

- 9.0 Temp. in cable tanks: fore tank  $79^{\circ}$  F., main tank  $78\frac{1}{2}^{\circ}$  F., after tank  $79^{\circ}$  F.  
Sighted land on port beam.

NOON.

- Moderate E by N breeze. Fine and clear.  
Bar.  $30.210$  ( $78^{\circ}$  F.). Temp.  $77^{\circ}$  F. dry,  $72.8^{\circ}$  F. wet. Sea surface  $77.4^{\circ}$  F.

Position by { Lat.  $9^{\circ} 22' 7''$  S.  
observations { Long.  $35^{\circ} 7' 6''$  W.

Current observed since 5.40 a.m. = N  $14^{\circ}$  E, 2.3 N.M. = 0.4 KT.

Distance run since noon yesterday = 172 N.M.

P.M.

- 0.30 Eased down engines in order to make Pernambuco at daylight to-morrow.

*Steaming from Bahia to Pernambuco.*

S.S. "SILVERTOWN."

HOUR. P.M.	At Pernambuco.
FRIDAY, AUGUST 26TH, 1892— <i>contd.</i>	
7.23	Sighted Cape Agostinho Lighthouse bearing N 5° E.
8.0	Moderate to fresh SE breeze. Fine and clear. Slight sea from ESE. Bar. 30.170 (78° F.). Temp. 76°·3 F. dry, 72° F. wet. Sea surface 77°·6 F.
MIDNT.	Similar weather. Cape Agostinho Light abeam, bearing N 69° W, 4 N.M. distant. Current observed since noon=N 32° W, 7.9 N.M.=0.66 KT.
SATURDAY, AUGUST 27TH, 1892.	
A.M. 3.40	Position by bearings—Olinda Light N 22° W, Picao Light N 37° W, Cape Agostinho Light S 42° W.
6.25	Let go starboard anchor in 7¼ fms. of water off the Reef Lighthouse, Pernambuco.
6.40	Let go port anchor. H.M.S. "Sirius" at anchor close by, and H.M.S. "Beagle," "Basilisk," and "Magpie," with the Telegraph S.S. "Norseman," inside the Reef.
8.0	Light SSE breeze. Fine and clear. Bar. 30.220 (78° F.). Temp. 77°·6 F. dry, 72.3 F. wet. Sea surface 78 F.
9.42	A lighter, containing 39 cases of furniture, 24 cases of provisions and stores, 16 sacks of lime, 6 barrels of cement, 72 planks of wood and sundry tools for Fernando Noronha Cable station, came alongside.
11.25	R. Molt (joiner), and Buckmaster and Campbell (cable hands), who were left here on the 17th inst. for land-line work, returned to ship. Pernambuco land-lines completed satisfactorily.
NOON.	Light SSE breeze. Fine, but cloudy, with passing showers of rain. Moderate swell from ESE. Bar. 30.204 (74° F.). Temp. 73° F. dry, 70°·5 F. wet. Sea surface 78°·2 F.
P.M. 0.22	Mr. R. K. Gray, accompanied by Señor Don Joaquim de Gusmao Coelho (Director of the Island of Fernando Noronha) and Capt. Lacey, of the telegraph steamer "Norseman," came on board.

*Steaming from Bahia to Pernambuco.*

S.S. "SILVERTOWN."

HOOR.  
P.M.

**Steaming from Pernambuco to Fernando Noronha.**

SATURDAY, AUGUST 27<sup>TH</sup>, 1892—*contd.*

- 1.30 The American Consul (Mr. Stevens) came on board.
- 1.35 Messrs. J. Rymer-Jones and F. W. Knight rejoined ship.
- 3.30 Señor Don Joaquim de Gusmaõ Coêlho left ship.
- 4.40 Messrs. Tuckness, of the Railway Company in Pernambuco, Keiller, of Messrs. Wilson, Sons, & Co., and Bailey, Wilson, and Oates, of the South American Cable Company, came on board. Messrs. Wilson and Oates proceed in ship to Fernando Noronha.
- 5.40 Mr. R. K. Gray, accompanied by Capt. Lacey, the American Consul, and Messrs. Keiller, Tuckness, Bailey, and visitors, left ship.
- Weighed anchors and set on for Fernando Noronha.
- 6.3 The following telegram was sent to Mr. Crouch at St. Louis by Mr. Benest, through Mr. J. G. Keiller, this afternoon: "Watch for signals from 11th September. Collect letters from Dakar; send off when ship arrives at St. Louis."
- 8.0 Light SSE breeze. Fine and clear.
- Bar. 30·155 (77° F.). Temp. 75°·4 F. dry, 73° F. wet. Sea surface 77° F.

SUNDAY, AUGUST 28<sup>TH</sup>, 1892.

A.M.  
8.0

Moderate E by S breeze. Fine and clear.

Bar. 30·150 (79° F.). Temp. 78° F. dry, 74°·3 F. wet. Sea surface 78°·3 F.

NOON.

Fresh ESE breeze. Fine, but cloudy. Moderate sea from ESE.

Bar. 30·145 (79° F.). Temp. 78°·3 F. dry, 74°·3 F. wet. Sea surface 79°·2 F.

Position by { Lat. 6° 20'·9 S.  
observations { Long. 33° 47'·8 W.

*Steaming from Bahia to Pernambuco.*

S.S. "SILVERTOWN."

Hour. P.M.	Steaming from Pernambuco to Fernando Noronha — <i>contd.</i>
	SUNDAY, AUGUST 28TH, 1892— <i>contd.</i>
	Current observed since 7.10 p.m. yesterday = N 5° W, 9.0 N.M. = 0.53 kt.
	Distance run since 6.0 p.m. yesterday = 121 N.M.
8.0	Fresh SE breeze. Fine, but cloudy and hazy. Moderate sea. Bar. 30.115 (79° F.). Temp. 78° F. dry, 74°·3 F. wet. Sea surface 78° F.
	MONDAY, AUGUST 29TH, 1892.
A.M. 5.52	Position { Lat. 4° 27'·0 S. by stars { Long. 32° 51'·2 W. Current observed since noon yesterday = N 12 W, 8.3 N.M. = 0.46 kt..
8.0	Fresh SE breeze. Fine, but cloudy, with mist. Moderate sea. Bar. 30.100 (78° F.). Temp. 77°·6 dry, 74°·3 F. wet. Sea surface 77°·7 F.
8.30	Sighted Fernando Noronha Island.
11.20	Fernando Noronha Peak bearing N 77° E, Cape Placelière bearing S 86 E. Current observed since 5.52 a.m. = N 24° W, 4.6 N.M. = 0.83 kt.
NOON.	Moderate SE breeze. Fine, but cloudy. Hot and sultry now under the lee of the island. Bar. 30.100 (80° F.). Temp. 78°·3 F. dry, 74°·6 F. wet. Sea surface 78°·8 F



AT FERNANDO NORONHA.

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SOUNDING OFF THE ISLAND.

---

S.S. "SILVERTOWN."

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AUGUST 29TH TO AUGUST 30TH, 1892.

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# AT FERNANDO NORONHA.

## S.S. "SILVERTOWN."

HOURL.  
P.M.

MONDAY, AUGUST 29TH, 1892—*contd.*

0.45 Moored ship with both anchors in 10 fms. of water off the Citadel of Fernando de Noronha.  
Draught { Forward 23' 8".  
of ship { Aft 30' 0".

4.28 Messrs. R. E. Peake and Lloyd left in steam-launch to verify the position of the two buoys put down when laying out Shore-End on the 7th inst.

4.45 Messrs. Peake and Lloyd returned to ship; buoys found to be practically in the same position.

5.0 Temperature in cable tanks: fore tank —, main tank 78½° F., after tank 79° F.

6.4 Lieutenant Lucena (Assistant Director of the Island) and Señor Almeida, accompanied by Messrs. Anstruther, Pratt, and Isley, of the South American Cable Company, came on board.

8.0 Moderate ESE breeze. Fine, but overcast. Threatening appearance over the land.

Bar. 30.120 (78° F.). Temp. 76°·8 F. dry, 73°·5 F. wet. Sea surface 78° F.

8.25 Lieut. Lucena, Señor Almeida, and Messrs. Anstruther, Pratt, and Isley, also Mr. C. Barret, left for shore.

During the day the cable hands have fitted bow and stern baulks with stoppers, tools, &c., got sounding machine ready for use, loaded boats with stores, and spliced together 5 pieces of the cable picked up on the 14th inst., viz., piece 2 on to piece 3, piece 5 on to piece 6, piece 3 on to piece 6, and piece 9 on to piece 2. Allowing 10 fms of cable expended

*At Fernando Noronha.*  
S.S. "SILVERTOWN."

Hour.  
P.M.

**Sounding off Fernando Noronha.**

MONDAY, AUGUST 29<sup>TH</sup>, 1892—*contd.*

for the 4 joints and splices, the total length of the 5 pieces above named, now=822 yards. During this afternoon all cable in main and after tanks has been tested; results satisfactory.

MIDNT.      Moderate SE wind.    Fine, but overcast.

TUESDAY, AUGUST 30<sup>TH</sup>, 1892.

A.M.

5.0            Commenced heaving up anchors.

5.10          Messrs. J. Rymer-Jones, W. Bent, and Dixon, with Jinter Gowing, left for Cable Hut.

5.55          Anchors up.    Set on for position to take soundings to the SE of the island.

7.39          Sounding { Lat. 3° 48'·20 S            } 868 fms. Lost 25 fms.  
              133 S { Long. 32° 19'·65 W        } of wire and tube.  
              Peak bearing S 72° W, 6·2 N.M. distant.

8.0            Fresh SE by S breeze.    Fine, but cloudy.    Moderate sea.  
Ship rolling.  
Bar. 30·120 (80° F.).    Temp. 78°·3 F. dry, 73°·3 F. wet.  
Sea surface 78°·8 F.

8.57          Sounding { Lat. 3° 52'·25 S            }  
              134 S { Long. 32° 18'·65 W        } 1096 fms. s.  
              Peak bearing N 73° W, 7·2 N.M. distant.

10.51        Sounding { Lat. 3° 58'·70 S            }  
              135 S { Long. 32° 20'·65 W        } 1847 fms. gl. oz.  
              Peak bearing N 30° W, 9·9 N.M. distant.

NOON.        Moderate SE breeze.    Fine, but cloudy.  
Bar. 30·150 (81° F.).    Temp. 80°·8, F. dry, 75°·8, F. wet.  
Sea surface 79° F.

P.M.

0.47          Sounding { Lat. 3° 58'·0 S            }  
              136 S { Long. 32° 27'·2 W        } 1473 fms. f.w.s.  
              Peak bearing N 12° E, 8 N.M. distant.

1.59          Sounding { Lat. 3° 55'·2 S            }  
              137 S { Long. 32° 28'·2 W        } 1055 fms. n.sn.  
              Peak bearing N 27° E, 5·7 N.M. distant.

*At Fernando Noronha.*  
S.S. "SILVERTOWN."

Hour.  
P.M.

**Putting down Mark-buoy.**

TUESDAY, AUGUST 30TH, 1892—*contd.*

- 2.47      Sounding { Lat.  $3^{\circ} 53' 30''$  S } 643 fms. h.  
             138 S { Long.  $32^{\circ} 29' 35''$  W }  
             Position { Placelière Point bearing N  $34\frac{1}{2}^{\circ}$  E.  
                         Tobacco Point bearing N  $69^{\circ}$  E.
- 3.0        Set on for anchorage off the Citadel in Water Bay.
- 4.2        Cut 500 yards = 0.246 N.M. off the top end of Light Deep Sea, No. 2083, Sec. "9" (which was left in fore tank on the 14th inst.), for land-line purposes.  
             6.261 N.M. (see 6.50 a.m., 14th inst.) — 0.246 N.M. = 6.015 N.M. of Light Deep Sea, No. 2083, Sec. "9," now remaining in fore tank.
- 4.27        Let go port anchor in  $10\frac{1}{2}$  fms. off the Citadel, Fernando Noronha.
- 4.57        Messrs. R. S. Lloyd and P. Bates left in steam-launch and port surf boat to place a 50 class buoy, as a permanent mark buoy, in position to show the route of the Shore-End cable running out from Peak Bay. Also to put another flagstaff and cage on Mark-buoy "71" let go at 11.55 a.m. on the 7th inst.
- 5.50        Messrs. Bates and Lloyd returned to ship in steam-launch with surf boat in tow, having placed Buoy 52, with flagstaff and cage, in 16 fms. of water.  
             Position { Lat.  $3^{\circ} 49' 48''$  S  
                         of buoy { Long.  $32^{\circ} 25' 35''$  W  
                         Peak, vertical angle  $13^{\circ} 51' = 0.76$  N.M. distant.  
                         Peak and Cable Hut  $31^{\circ} 34'$ .  
             The following are the moorings on Buoy "52" the shackles of which are rivited on:—  
                         3 10 fm.-lengths of  $\frac{7}{8}$ " chain.  
                         1 mushroom = 4 cwt. 1 qr. 1 lb.  
             NOTE.—The word "Cable" in large letters is painted on the buoy.
- 6.25        Messrs. J. Rymer-Jones and W. Bent, with Jointer Gowing, returned from Cable Hut.

*At Fernando Noronha.*  
S.S. "SILVERTOWN."

Hour.

**Splicing up recovered Cable.**

TUESDAY, AUGUST 30TH, 1892—*contd.*

P.M.

7.26

T. J. Doyle, of the S. A. C. Co.'s staff here, rejoined ship for passage to England.

7.55

Captain Thomson and Mr. B. C. Combe (Navigating Officer) left for shore to take sights.

Mr. J. Rymer-Jones, with Jointer Gowing, also left for Cable Hut to finish fitting up all instruments required in the hut for the laying of the Fernando Noronha—Senegal Section.

8.0

Light SE breeze. Fine, but cloudy.

Bar. 30.150 (78° F.). Temp. 78° 2 F. dry, 74° 2 F. wet. Sea surface 78° 1 F.

NOTE.—The opening out of a trench, 920 yards in length, for land-lines from Cable Hut to the S. A. C. Co.'s office in the "Secretaria," has to-day been completed. After ship left here on the 15th inst. for Pernambuco, tests were taken on the five drums of land-line cable (landed here on 4th inst.) by Mr. H. B. Forde; the cable on four of the drums was found to be faulty. The remaining drum of good cable is only enough to complete one cable from the hut to the office.

Cable hands, with Jointer Molt, have also to-day spliced piece No. 16 of cable picked up on the 14th inst. on to the five pieces of picked up cable spliced together on the 19th inst., and spliced the 500 yards of Light Deep Sea, cut off Sec. "9" in fore tank this afternoon on to piece No. 16; thus making a length of 916 yards (allowing for splices) of sundry types, as shown in the following sketch:—

Piece No. 4. L.I.	Piece No. 10. H.D.S.	Piece No. 11. H.D.S.	Piece No. 13. H.D.S.	Piece No. 7. H.D.S.	Piece No. 16. H.D.S.	L.D.S.
No. 2144	No. 2143	No. 2143	No. 2143	No. 2143	No. 2143	No. 2083
79 yds.	56 yds.	56 yds.	64 yds.	51 yds.	115 yds.	495 yds. = 916 yds.

They have also spliced piece No. 8=103 yards of cable picked up on the 14th inst. on to the five pieces of picked up cable spliced together yesterday; thus making a length of 920 yards (allowing for splices) of sundry types, as shown in the following sketch, and which will be landed to-morrow morning for a third land-line:—

Piece No. 8. H.D.S.	Piece No. 9. H.D.S.	Piece No. 2. L.I.	Piece No. 3. L.I.	Piece No. 6. L.I.	Piece No. 5. L.I.
No. 2143	No. 2143	No. 2144	No. 2144	No. 2144	No. 2144
98 yds.	131 yds.	211 yds.	209 yds.	126 yds.	145 yds. = 920 yds.

LAYING THE FERNANDO NORONHA—  
ST. LOUIS SECTION.

---

LANDING FERNANDO SHORE-END.

---

PAYING OUT FROM FERNANDO TO ST. LOUIS.

---

LOSING ST. LOUIS END, BUOYING  
FERNANDO END.

---

RECOVERY OF ST. LOUIS END ; PAYING OUT  
FROM ST. LOUIS END TO FERNANDO END,  
AND FINAL SPLICE.

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SUMMARY OF CABLE LAID.

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S.S. "SILVERTOWN."

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AUGUST 31ST TO SEPTEMBER 11TH, 1892.

---

AT ST. LOUIS, AND LEAVING FOR CANARY ISLANDS,  
SEPTEMBER 12TH, 1892.

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# LAYING THE FERNANDO NORONHA— ST. LOUIS SECTION.

S.S. "SILVERTOWN."

Hour.	Landing Fernando Shore-End.
	WEDNESDAY, AUGUST 31st, 1892.
A.M.	
6.0	Weighed anchor and set on for position to land the Shore-End of the Fernando de Noronha—Senegal Section in Peak Bay.
6.42	Let go port anchor in $9\frac{1}{2}$ fms. of water off Cable Hut in Peak Bay; veered chain to 40 fms.
6.54	Steam-launch left to bring large jangada alongside.
7.0	Sealed top end of Shore-End, No. 2151, Sec. "3A," in after tank ready for landing.
7.18	Mr. J. Rymer-Jones, with Jointer Gowing and Doyle, left for Cable Hut. Commenced coiling 5 coils of $4\frac{1}{2}$ " rope in starboard cutter ready for hauling lines, and getting all gear in readiness for the landing of Shore-End and laying cable.
7.26	Surf boat left for shore with a quantity of provisions and luggage for the Cable Hut.
7.55	Mr. P. Bates left in steam-launch for shore, to arrange for native crew for jangada.
8.0	Light SE breeze. Fine and clear. Bar. 30.165 (78° F.). Temp. 77°-8 F. dry, 74° F. wet. Sea surface 78° F. Finished coiling the 5 coils of $4\frac{1}{2}$ " rope in starboard cutter, and hands went to breakfast.
8.5	Observed steam-launch, with surf boat in tow, proceeding to Water Bay with native crew for jangada.
8.27	Surf boat returned to ship.
8.50	Steam-launch returned to ship with large jangada in tow.



S.S. "SILVERTOWN."

Hour. A.M.	Landing Fernando Shore-End— <i>contd.</i>
	WEDNESDAY, AUGUST 31st, 1892— <i>contd.</i>
8.55	Commenced loading jangada with the 920 yards length of land-line cable (see note at 8 p.m. yesterday), No. 8 piece being the first on the jangada.
9.13	Finished coiling the 920 yards of cable on the jangada.
9.30	Jangada left in tow of steam-launch for the beach. Mr. P. Bates, in charge, with Mr. Purdom, for signalling duty, and 6 cable hands on board the jangada with the coil of cable.
9.35	Messrs. W. Bent and P. F. Anstruther left ship. Mr. W. Bent will remain at Fernando Noronha as the representative of Messrs. Clark, Forde, and Taylor during the laying of the Fernando Noronha—Senegal Section, and to take the final tests after completion.
9.40	Commenced coiling four coils of 4" rope, and one coil of 4½" rope, in port cutter, for hauling lines.
10.13	Finished coiling four coils of 4" rope, and one coil of 4½" rope in port cutter, for hauling lines.
10.37	Steam-launch returned with jangada in tow, having landed the 920 yards of land-line cable on the beach in front of Cable Hut.
10.40	Commenced loading jangada with the second length of land-line cable, 916 yards in length, from ship.
11.7	Steam launch took jangada in tow, with the 916 yards of cable for land-line, for the beach. Surf boat also in tow. Mr. J. Schneider, who will remain in charge of the operations at Cable Hut during the laying of the cable to Senegal, left in steam-launch. Mr. Schneider will be assisted in the work at the Cable Hut by Mr. Dixon, and by Mr. C. Wilson and others of the S.A.C. Co.'s staff at Fernando Noronha.
11.28	Recalled steam-launch.
11.33	Steam-launch took both cutters, containing hauling lines to form endless messenger between ship and beach for the landing of Shore-End, in tow for the beach.
11.55	Signalled to shore, "Get ropes ashore as soon as possible, and hoist flag." Shore replied, "O.K."



S.S. "SILVERTOWN."

Hour.

Landing Fernando Shore-End.—*contd.*

WEDNESDAY, AUGUST 31st, 1892—*contd.*

A.M.

11.59

Hauled end of Shore-End cable, No. 2151, Sec. "3A," from after tank along leads, and four times round paying-out drum to stern baulks. Starboard cutter, in tow of steam-launch, returned to ship, paying out  $4\frac{1}{2}$ " rope from beach, took end of the rope from cutter inboard over stern, and made it fast to end of Shore-End cable on stern baulks. Four ropes only required between ship's stern and beach.

NOON.

Light SE breeze. Overcast and squally, with heavy showers of rain at times.

Bar. 30.173 (79° F.). Temp. 77.8° F. dry, 73.8° F. wet. Sea surface 78.9° F.

P.M.

0.2

Surf-boat returned to ship.

0.15

Signalled to shore, "Robinson to Bates. Get ropes out of cutters."

Natives unloading the jangada of the 916 yards of land-line cable at the beach.

0.25

Hoisted up starboard cutter.

0.30

Signalled to shore, "Send off port surf boat when cutter comes."

0.43

Port surf boat returned to ship.

Port cutter in tow of steam-launch returned to ship, paying out 4" rope from the beach; took end of the fourth coil of rope from cutter over starboard bow sheave and along to starboard picking-up drum. Endless messenger between ship and beach now complete.

The following telegrams were sent *via* Pernambuco:—

1. "To R. K. Gray. Now leaving for St. Louis. All complete here. Regards, Benest, 31st, p.m."

2. "To Crouch, St. Louis. Now sailing for St. Louis. Advise me about tests and if you leave before we reach buoy. Benest, 31st."

Shore signalled, "Will lay other land-line to-morrow. All hands required for Shore-End."

1.5

Hoisted up port cutter.

1.10

Shore signalled, "Stopper on at 280 ft." Set about bending on 280 ft. of the endless messenger on stern baulks on to end of Shore-End on stern baulks.

Natives on beach opening out trench for Shore-End cable.

S.S. "SILVERTOWN."

Hour.

Landing Fernando Shore-End—*contd.*

P.M.

WEDNESDAY, AUGUST 31st, 1892—*contd.*

- 1.12 Shore hoisted "All ready" signal.
- 1.26 Commenced heaving in on endless messenger with starboard picking-up drum.
- 1.27 Commenced paying out Shore-End cable, No. 2151, Sec. "3A," from after tank. End of cable passed over stern sheave with 1st balloon buoy attached.
- 1.28 Steam-launch returned to ship.
- 1.59 Steam-launch left for shore.
- 2.12 End of Shore-End cable, on beach. 32 balloon buoys out. 0.466 N.M. of Shore-End cable paid out between ship and beach.

- 2.23 Shore signalled, "Enough cable on shore." Stopped heaving in on endless messenger with starboard picking-up drum and paying out on cable over stern sheave with paying-out drum. 35 balloon buoys out.

Shore-End cable, No. 2151, Sec. "3A," paid out between Ship and Cable House .. = 0.523 N.M.  
 Shore-End cable, No. 2151, Sec. "3A," paid out between Ship and beach .. .. = 0.466 "

Length of cable between Cable House and beach .. .. = 0.057 N.M.

Position of ship { Lat. 3° 49' 68 S.  
 Long. 32° 25' 52 W.  
 Peak bearing S 3¾° E, 0.52 N.M. distant.  
 „ and Cable House 43° 42'.

Distance, by chart, from ship to beach = 0.520 N.M.

NOTE.—This cable lies in a straight line from ship to beach and to the westward of the Shore-End of the Fernando Noronha—Pernambuco Section landed on the 7th inst.

Paying out Fernando Shore-End.

- 2.35 Steam-launch and surf boat returned to ship, with T. J. Doyle from Cable Hut, and D. Healey (carpenter).
- 2.47 Shore signalled, "Take balloons off."
- 2.57 Steam-launch and surf boat left for shore.
- 3.12 Starboard surf boat and gig left to take balloon buoys off Shore-End cable.

S.S. "SILVERTOWN."

Hour.	Paying out Fernando Shore-End— <i>contd.</i>
P.M.	WEDNESDAY, AUGUST 31st, 1892— <i>contd.</i>
3.22	Resumed heaving in on endless messenger, with starboard picking-up drum.
3.25	Steam-launch and port surf boat returned to ship, bringing off spider wheels, chain, and sundry gear from the beach.
3.35	Port surf boat left for the beach again, to bring off the remainder of the gear that has been in use on the beach for the landing of Shore-Ends on the 7th inst. and to-day.
3.45	End of messenger came inboard over bows with two sand anchors and seven balloons attached.
4.8	Mr. R. E. Peake and Capt. Thomson returned to ship in port surf boat, bringing the remainder of the Shore-End landing gear.
4.10	Steam-launch brought gig and starboard surf boat alongside, with the remainder of the balloon buoys, except one which has sunk with cable. Shore signalled, "Hoist up all boats and steam-launch except cutter. Send her ashore with gig's crew." Port surf boat left for shore in answer to this signal. Natives on the beach have now finished covering up the Shore-End on the beach from Cable Hut to water's edge.
4.25	All cable hands that have been working on shore returned to ship in port surf boat.
4.45	Steam-launch and all boats now hoisted up, except port surf boat, which is now leaving for the beach again. Shore signalled, "Schneider to Webb. Look out for call on mirror, now ready."
5.0	Ship speaking shore on mirror through all cable in after tank=887·383 N.M. Pumped water out of after cable tank. T. Temp. of bottom water, $9\frac{1}{2}$ fms. amidships=77 $\frac{1}{2}$ ° F. min., 78°·9 F. max.
6.54	Messrs. Benest, J. Rymer-Jones, P. Bates, and Purdom, with jointer Gowing, returned to ship.
7.0	Commenced to heave up anchor. Port surf boat hoisted up.
7.12	Anchor up. Set jib to cant ship's head round on to course to the northward.

S.S. "SILVERTOWN."

Hour.	Paying out Fernando Shore-End—contd.
P.M.	WEDNESDAY, AUGUST 31st, 1892—contd.
	Put engine of paying-out machine out of gear. Weight on brake levers=849 lbs.
7.17	Set on "easy ahead." SHIP ON COURSE N 5° W. Cable commenced running out.
7.26	Increased ship's engines to 25 revs. per min.
	<b>Paying out Fernando Intermediate.</b>
7.30	0.876 N.M. of Shore-End, No. 2151, Sec. "3A," paid out from after tank. Ship's engines=25½ revs. per min. Drum=18 revs. per min.=3 kts. Weight on brake levers=849 lbs.
7.41	SPLICE between Shore-End, No. 2151, Sec. "3A," and Heavy Intermediate, No. 2150, pt. Sec. "4B," from after tank, passed off drum. Shore-End, No. 2151, Sec. "3A," paid out by Drum measurement .. .. =1.497 N.M. Shore-End, No. 2151, Sec. "3A," paid out by Factory measurement .. .. =1.500 ,, Difference .. .. = -0.003 N.M. Patent log=1 N.M. Depth=30 fms. TOTAL CABLE LAID FROM F. NORONHA HUT=1.5 N.M. Position { Lat. 3° 48' 73 S. of splice { Long. 32° 25' 68 W. Peak bearing S 5° E, 1.5 N.M. distant. Increased ship's engines to 30 revs. per min.
7.54	SPLICE between Heavy Intermediate, No. 2150, pt. Sec. "4B," and Light Intermediate, No. 2149, pt. Sec. "4c," from after tank, passed off drum. Heavy Intermediate, No. 2150, pt. Sec. "4B," paid out by Drum measurement .. =0.986 N.M. Heavy Intermediate, No. 2150, pt. Sec. "4B," paid out by Factory measurement =0.990 ,, Difference .. .. = -0.004 N.M. Patent log=1.9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=2.490 N.M. Depth=40 fms. CHANGED COURSE TO N 38° E.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.

P.M.

**Paying out Fernando Intermediate—contd.**

WEDNESDAY, AUGUST 31st, 1892—contd.

CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, N 5° W=1.967 N.M.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 5° W=1.877 N.M.

SLACK=0.48%. For courses made good, see Position Sheet.

Position { Lat. 3° 47' 70 S.

of splice { Long. 32° 25' 70 W.

Peak bearing S 5° E, 2.47 N.M. distant.

8.0 Moderate SE breeze. Fine and clear. Smooth sea with slight swell.

Bar. 30.140 (78° F.). Temp. 78° F. dry, 74° F. wet. Sea surface 78° 6 F.

8.15 SPLICE between Light Intermediate, No. 2149, pt. Sec. "4c," and Heavy Deep Sea, No. 2148, pt. Sec. "1," from after tank, passed off drum.

Light Intermediate, No. 2149, pt. Sec. "4c,"

paid out by Drum measurement .. = 1.488 N.M.

Light Intermediate, No. 2149, pt. Sec. "4c,"

paid out by Factory measurement .. = 1.490 "

Difference. . . = -0.002 N.M.

Patent log=3.4 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=3.980 N.M.

Depth=230 fms.

Position { Lat. 3° 46' 6 S.

of splice { Long. 32° 24' 9 W.

8.30 1.071 N.M. of Heavy Deep Sea, No. 2148, pt. Sec. "1," paid out. Patent log=4.3 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=5.051 N.M.

Depth=550 fms.

Ship's engines=30 revs. per min. Drum=29 revs. per min.=5 kts. Weight on brake levers=849 lbs. Strain=12 cwt. Strophometer=27 revs.

**Paying out Light Deep Sea from Fernando.**

8.40 SPLICE between Heavy Deep Sea, No. 2148, pt. Sec. "1," and Light Deep Sea, No. 2147, Sec. "5 pt. A," from after tank, passed off drum.

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	WEDNESDAY, AUGUST 31st, 1892— <i>contd.</i>
	Heavy Deep Sea, No. 2148, pt. Sec. "1," paid out by Drum measurement .. .. =1·959 N.M.
	Heavy Deep Sea, No. 2148, pt. Sec. "1," paid out by Factory measurement .. .. =1·990 "
	Difference. . . . = -0·031 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=5·970 N.M.
	Patent log=4·95 N.M.
	Depth=900 fms.
	Position { Lat. 3° 45'·2 S. of splice { Long. 32° 23'·8 W.
8.48	Increased ship's engines to 35 revs. per min.
9.0	1·805 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=6·3 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=7·775 N.M.
	Depth=1000 to 1500 fms.
	Drum=31 revs. per min.=5·5 KTS. Ship's engines=36 revs. per min. Weight on brake levers=849 lbs. Dynamo- meter=11 to 12 cwt. Strophometer=27 revs.
9.30	4·525 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=9·0 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=10·495 N.M.
	Depth=1000 to 1700 fms.
	Drum=31 revs. per min.=5·5 KTS. Ship's engines=35 revs. per min. Weight on brake levers=849 lbs. Dyna- mometer=13 cwt. Strophometer=27 to 30 revs.
10.0	7·361 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=11·2 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=13·331 N.M.
	Depth=1400 to 2000 fms.
	Drum=33 revs. per min.=5·8 KTS. Ship's engines=35 revs. per min. Weight on brake levers=849 lbs. Dyna- mometer=14 cwt. Strophometer=27 to 30 revs.
10.30	10·287 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=14 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=16·257 N.M.
	Depth=1800 to 2100 fms.
	Drum=33 revs. per min.=5·84 KTS. Ship's engines=35 revs. per min. Weight on brake levers=849 lbs. Dyna- mometer=15 cwt. Strophometer=29 to 31 revs.



*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	WEDNESDAY, AUGUST 31st, 1892— <i>contd.</i>
10.46	Weight on brake levers increased to 987 lbs.
10.51	" " " " " " 1056 "
11.0	13·052 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=16·5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=19·022 N.M. Depth=1900 to 2200 fms. Drum=30 revs. per min.=5·31 KTS. Ship's engines=36 revs. per min. Weight on brake levers=1056 lbs. Dyna- mometer=25 cwt. Strophometer=25 to 27 revs.
11.7	Weight on brake levers increased to 1193 lbs.
11.15	" " decreased to 1125 "
11.30	15·772 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=19 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=21·742 N.M. Depth=2000 to 2200 fms. Drum=31 revs. per min.=5·49 KTS. Ship's engines=35 revs. per min. Weight on brake levers=1125 lbs. Dynamo- meter=28 cwt. Strophometer=27 to 31 revs.
11.35	Weight on brake levers increased to 1193 lbs.
MIDNT.	Moderate SE wind. Fine and clear. Moderate sea from SE. Ship rolling. Bar. 30·170 (78° F.). Temp. 77°·5 F. dry, 75° F. wet. Sea surface 78° F. 18·575 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=21·4 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=24·545 N.M. Depth=2200 fms. Drum=33 revs. per min.=5·84 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=1193 lbs. Dynamo- meter=27 cwt. Strophometer=28 to 31 revs.
A.M.	THURSDAY, SEPTEMBER 1st, 1892.
0.2	Weight on brake levers increased to 1262 lbs.
0.25	" " " " " " 1330 "
0.30	21·457 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=23·9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=27·427 N.M.

S.S. "SILVERTOWN."

Hour. A.M.	Paying out Light Deep Sea from Fernando—contd.
	THURSDAY, SEPTEMBER 1st, 1892—contd.
	Depth=2200 fms. Drum=33 revs. per min.=5.84 kts. Ship's engines=35½ revs. per min. Weight on brake levers=1330 lbs. Dynamometer=32 cwt. Strophometer=27 to 31 revs.
0.34	Weight on brake levers increased to 1396 lbs.
0.40	" " " " " " 1463 "
0.46	" " " " " " 1530 "
1.0	24.304 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=25.6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=30.274 N.M. Depth=2200 fms. Drum=32 revs. per min.=5.6 kts. Ship's engines=35½ revs. per min. Weight on brake levers=1530 lbs. Dynamometer=33 cwt. Strophometer=28 to 33 revs.
1.6	Weight on brake levers decreased to 1463 lbs.
1.30	27.172 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=27.9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=33.142 N.M. Depth=2200 fms. Drum=32 revs. per min.=5.66 kts. Ship's engines=35½ revs. per min. Weight on brake levers=1463 lbs. Dynamometer=34 cwt. Strophometer=28 to 35 revs.
2.0	30.033 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=30.4 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=36.003 N.M. Depth=2240 fms. Drum=32 revs. per min.=5.66 kts. Ship's engines=35½ revs. per min. Weight on brake levers=1463 lbs. Dynamometer=34 cwt. Strophometer=28 to 35 revs.
2.20	Weight on brake levers increased to 1530 lbs.
2.30	32.925 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=32.8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=38.895 N.M. Depth=2260 fms. Drum=32½ revs. per min.=5.78 kts. Ship's engines=35½ revs. per min. Weight on brake levers=1530 lbs. Dynamometer=35 cwt. Strophometer=28 to 35 revs.



S.S. "SILVERTOWN."

Hour.

A.M.

Paying out Light Deep Sea from Fernando—*contd.*

THURSDAY, SEPTEMBER 1ST, 1892—*contd*

3.0 35·772 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=35·1 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=41·742 N.M.

Depth=2300 fms.

Drum=32 revs. per min.=5·68 KTS. Ship's engines=35½  
revs. per min. Weight on brake levers=1530 lbs.  
Dynamometer=35 cwt. Strophometer=28 to 35 revs.

3.30 38·743 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=37·6 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=44·713 N.M.

Depth=2350 fms.

Drum=33 revs. per min.=5·84 KTS. Ship's engines=35½  
revs. per min. Weight on brake levers=1530 lbs.  
Dynamometer=35 cwt. Strophometer=28 to 35 revs.

Weight on brake levers increased to 1597 lbs.

3.40 " " " " " " 1663 "

4.0 Moderate SE wind. Fine, and clear. Slight SE sea and  
swell.

Bar. 30·130 (78° F.). Temp. 78° F. dry, 73° F. wet.  
Sea surface 78° F.

41·717 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=40·0 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=47·687 N.M.

Depth=2360 fms.

Drum=33 revs. per min.=5·84 KTS. Ship's engines=  
35½ revs. per min. Weight on brake levers=1663 lbs.  
Dynamometer=35 cwt. Strophometer=28 to 35 revs.

4.30 44·667 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=42·5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=50·637 N.M.

Depth=2360 fms.

Drum=33 revs. per min.=5·8 KTS. Ship's engines=  
35½ revs. per min. Weight on brake levers=1663 lbs.  
Dynamometer=35 cwt. Strophometer=28 to 35 revs.

4.55 Weight on brake levers increased to 1729 lbs.

S.S. "SILVERTOWN."

Hour.  
A.M.

Paying out Light Deep Sea from Fernando—*contd.*

THURSDAY, SEPTEMBER 1st, 1892—*contd.*

- 5.0 47·623 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=44·9 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=53·593 N.M.  
Depth=2380 fms.  
Drum=33 revs. per min.=5·8 KTS. Ship's engines=35  
revs. per min. Weight on brake levers=1729 lbs.  
Dynamometer=35 cwt. Strophometer=28 to 34 revs.
- 5.5 Weight on brake levers increased to 1795 lbs.
- 5.7 " " " " decreased to 1729 "
- 5.30 50·614 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=47·4 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=56·584 N.M.  
Depth=2370 fms.  
Drum=33 revs. per min.=5·8 KTS. Ship's engines=35  
revs. per min. Weight on brake levers=1729 lbs. Dynamo-  
meter=32 cwt. Strophometer=28 to 32 revs.
- 5.58 Weight on brake levers increased to 1795 lbs.
- 6.0 53·650 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=49·0 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=59·620 N.M.  
Depth=2380 fms.  
Drum=34 revs. per min.=6·018 KTS. Ship's engines=35½  
revs. per min. Weight on brake levers=1795 lbs. Dynamo-  
meter=30 cwt. Strophometer=26 to 35 revs.
- 6.30 56·580 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=51·4 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=62·550 N.M.  
Depth=2380 fms.  
Drum=33 revs. per min.=5·84 KTS. Ship's engines=35  
revs. per min. Weight on brake levers=1795 lbs. Dynamo-  
meter=34 cwt. Strophometer=26 to 32 revs.  
Position by { Lat. 3° 4'·3 S.  
observations { Long. 31° 56'·9 W.  
Current observed since 7.54 p.m. yesterday=N 36° W,  
7·2 N.M.=0·7 KT.

S.S. "SILVERTOWN."

Hour.  
A.M.

**Paying out Light Deep Sea from Fernando—contd.**

THURSDAY, SEPTEMBER 1st, 1892—contd.

- 7.0      59·506 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=53·8 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=65·476 N.M.  
Depth=2380 fms.  
Drum=33 revs. per min.=5·84 KTS. Ship's engines=35  
revs. per min. Weight on brake levers=1795 lbs. Dynamometer=33 cwt. Strophometer=30 revs.
- 7.30      62·419 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=56·4 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=68·389 N.M.  
Depth=2380 fms.  
Drum=32 revs. per min.=5·66 KTS. Ship's engines=34½  
revs. per min. Weight on brake levers=1795 lbs. Dynamometer=32 cwt. Strophometer=28 to 35 revs.
- 8.0      Moderate SE wind. Fine and clear. Moderate SE swell.  
Bar. 30·152 (78° F.). Temp. 77·5° F. dry, 73·6° F. wet.  
Sea surface 77·9° F.  
65·389 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=58·8 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=71·359 N.M.  
Depth=2380 fms.  
Drum=33 revs. per min.=5·84 KTS. Ship's engines=35  
revs. per min. Weight on brake levers=1795 lbs. Dynamometer=30 cwt. Strophometer=27 to 34 revs.
- 8.30      68·411 N.M. of Light Deep Sea, No. 2147 Sec. "5 pt. A,"  
paid out from after tank. Patent log=61·1 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=74·381 N.M.  
Depth=2390 fms.  
Drum=34 revs. per min.=6·02 KTS. Ship's engines=35  
revs. per min. Weight on brake levers=1795 lbs. Dynamometer=30 cwt. Strophometer=27 to 35 revs.
- 8.43      Increased ship's engines to 37 revs. per min.
- 8.50      Weight on brake levers increased to 1993 lbs.
- 9.0      71·473 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=63·6 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=77·443 N.M.  
Depth=2400 fms.

S.S. "SILVERTOWN."

HOURLY  
A.M.

Paying out Light Deep Sea from Fernando—*contd.*

THURSDAY, SEPTEMBER 1st, 1892—*contd.*

Drum=36 revs. per min.=6.37 kts. Ship's engines=37 revs. per min. Weight on brake levers=1993 lbs. Dynamometer=35 cwt. Strophometer=34 to 36 revs.

9.30 74.659 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=66.4 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=80.629 N.M.  
Depth=2400 fms.

Drum=36 revs. per min.=6.37 kts. Ship's engines=38 revs. per min. Weight on brake levers=1993 lbs. Dynamometer=30 cwt. Strophometer=30 to 37 revs.

Position by { Lat. 2° 52'.5 S.  
observations { Long. 31° 47'.6 W.

Current observed since 6 a.m.=N 54° W, 1.4 N.M.=0.5 KT.

10.0 77.831 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=69.1 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=83.801 N.M.  
Depth=2400 fms.

Drum=36 revs. per min.=6.37 kts. Ship's engines=37 revs. per min. Weight on brake levers=1993 lbs. Dynamometer=35 cwt. Strophometer=27 to 32 revs.

10.25 Weight on brake levers increased to 2059 lbs.

10.30 80.955 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=71.8 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=86.925 N.M.  
Depth=2400 fms.

Drum=36 revs. per min.=6.37 kts. Ship's engines=38 revs. per min. Weight on brake levers=2059 lbs. Dynamometer=30 cwt. Strophometer=30 to 35 revs.

10.50 Increased ship's engines to 39 revs. per min.

11.0 84.136 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=74.7 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=90.106 N.M.  
Depth=2400 fms.

Drum=37½ revs. per min.=6.62 kts. Ship's engines=39 revs. per min. Weight on brake levers=2059 lbs. Dynamometer=32 cwt. Strophometer=33 to 35 revs.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

HOOR.  
A.M.

Paying out Light Deep Sea from Fernando—*contd.*

THURSDAY, SEPTEMBER 1ST, 1892—*contd.*

11.30

87·461 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=77·6 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=93·431 N.M.

Depth=2400 fms.

Drum=38 revs. per min.=6·72 KTS. Ship's engines=40 revs. per min. Weight on brake levers=2059 lbs. Dynamometer=32 cwt. Strophometer=34 to 37 revs.

NOON.

Light SE wind. Fine and clear. Moderate sea and swell. Bar. 30·165 (79° F.). Temp. 77°·8 F. dry, 73°·8 F. wet. Sea surface 78°·7 F.

90·735 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=80·5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=96·705 N.M.

Depth=2400 fms.

Drum=37½ revs. per min.=6·62 KTS. Ship's engines=39 revs. per min. Weight on brake levers=2059 lbs. Dynamometer=32 cwt. Strophometer=34 to 37 revs.

P.M.

0.28

(Observed noon.) 93·863 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank.

TOTAL CABLE LAID FROM F. NORONHA HUT=99·833 N.M.

DISTANCE, BY CHART, OVERGROUND, FROM FERNANDO NORONHA HUT=86·337 N.M.

SLACK=15·6%.

Position { Lat. 2° 40'·3 S.

{ Long. 31° 35'·6 W.

Difference or set since 9.30 a.m.=W, 0·2 N.M.

CHANGED COURSE TO N 39° E.

CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 38° E =97·343 N.M.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 38° E=83·940 N.M.

SLACK=15·95%.

0.30

94·054 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=83·7 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=100·024 N.M.

Depth=2400 fms.

Drum=37 revs. per min.=6·55 KTS. Ship's engines=39½ revs. per min. Weight on brake levers=2059 lbs. Dynamometer=32 cwt. Strophometer=34 to 37 revs.



*Laying the Fernando Noronha—St. Louis Section.*

## S.S. "SILVERTOWN."

Hour. P.M.	Paying out Light Deep Sea from Fernando—contd.
	THURSDAY, SEPTEMBER 1st, 1892—contd.
0.46	Increased ship's engines to 41 revs. per min.
1.0	97·344 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=86·7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=103·314 N.M. Depth=2400 fms. Drum=37 revs. per min.=6·55 KTS. Ship's engines= 40 revs. per min. Weight on brake levers=2059 lbs. Dynamometer=32 cwt. Strophometer=37 revs.
1.30	100·713 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=89·6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=106·683 N.M. Depth=2400 fms. Drum=37 revs. per min.=6·55 KTS. Ship's engines= 41 revs. per min. Weight on brake levers=2059 lbs. Dynamometer=32 cwt. Strophometer=30 to 39 revs.
2.0	104·156 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=92·9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=110·126 N.M. Depth=2450 fms. Drum=38½ revs. per min.=6·88 KTS. Ship's engines= 41 revs. per min. Weight on brake levers=2059 lbs. Dynamometer=32 cwt. Strophometer=35 to 39 revs.
2.10	Increased ship's engines to 43 revs. per min.
2.30	107·661 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=96·3 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=113·631 N.M. Depth=2450 fms. Drum=39½ revs. per min.=7·00 KTS. Ship's engines= 42½ revs. per min. Weight on brake levers=2059 lbs. Dynamometer=32 cwt. Strophometer=35 to 39 revs.
3.0	111·225 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=99·5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=117·195 N.M. Depth=2450 fms. Drum=40 revs. per min.=7·12 KTS. Ship's engines=42 revs. per min. Weight on brake levers=2059 lbs. Dynamo- meter=31 cwt. Strophometer=35 to 40 revs.
3.30	114 824 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=103 N.M.

S.S. "SILVERTOWN."

Hour.  
P.M.

Paying out Light Deep Sea from Fernando—*contd.*

THURSDAY, SEPTEMBER 1ST, 1892—*contd.*

TOTAL CABLE LAID FROM F. NORONHA HUT=120·794 N.M.  
Depth=2450 fms.

Drum=40½ revs. per min.=7·18 KTS. Ship's engines=42  
revs. per min. Weight on brake levers=2059 lbs. Dynamo-  
meter=32 cwt. Strophometer=37 to 40 revs.

3.35 Weight on brake levers increased to 2125 lbs.

3.58 " " " 2453 "

4.0 Light SE by S wind. Fine and clear. Slight SE swell.  
Bar. 30·120 (79° F.). Temp. 77°·8 F. dry, 74°·7 F. wet. Sea  
surface 78° F.

118·444 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=106·4 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=124·414 N.M.  
Depth=2470 fms.

Drum=40½ revs. per min.=7·24 KTS. Ship's engines=43  
revs. per min. Weight on brake levers=2453 lbs. Dynamo-  
meter=35 cwt. Strophometer=37 to 41 revs.

4.30 122·043 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=109·7 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=128·013 N.M.  
Depth=2470 fms.

Drum=40½ revs. per min.=7·18 KTS. Ship's engines=43  
revs. per min. Weight on brake levers=2453 lbs. Dynamo-  
meter=35 cwt. Strophometer=37 to 41 revs.

4.45 Increased ship's engines to 44 revs. per min.

5.0 125·660 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=113·2 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=131·630 N.M.  
Depth=2500 fms.

Drum=40½ revs. per min.=7·18 KTS. Ship's engines=44  
revs. per min. Weight on brake levers=2453 lbs. Dynamo-  
meter=35 cwt. Strophometer=39 to 41 revs.

5.9 Weight on brake levers increased to 2518 lbs.

5.30 129·348 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A,"  
paid out from after tank. Patent log=116·6 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=135·318 N.M.  
Depth=2500 fms.

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	THURSDAY, SEPTEMBER 1st, 1892— <i>contd.</i>
	Drum=41 revs. per min.=7.25 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2518 lbs. Dynamo-meter=35 cwt. Strophometer=38 to 42 revs.
5.40	Weight on brake levers increased to 2584 lbs.
6.0	133.116 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=120.1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=139.086 N.M. Depth=2500 fms. Drum=42 revs. per min.=7.43 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2584 lbs. Dynamo-meter=35 cwt. Strophometer=34 to 42 revs.
6.30	136.937 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=123.7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=142.907 N.M. Depth=2500 fms. Drum=43 revs. per min.=7.61 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2584 lbs. Dynamo-meter=34 cwt. Strophometer=33 to 42 revs.
7.0	140.781 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=127.1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=146.751 N.M. Depth=2500 fms. Drum=43 revs. per min.=7.43 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2584 lbs. Dynamo-meter=35 cwt. Strophometer=33 to 42 revs.
7.30	144.586 N.M. of Light Deep Sea, No. 2147, Sec. "5 pt. A," paid out from after tank. Patent log=130.7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=150.556 N.M. Depth=2500 fms. Drum=43 revs. per min.=7.43 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2584 lbs. Dynamo-meter=35 cwt. Strophometer=35 to 42 revs.
7.38	SPLICE in Light Deep Sea, No. 2147, between Sec. "5 pt. A," and Sec. "6," from after tank, passed off drum. Light Deep Sea, No. 2147, Sec. "5" pt. "A," paid out by Drum measurement .. =145.675 N.M. Light Deep Sea, No. 2147, Sec. "5," pt. "A," paid out by Factory measurement .. =145.662 ,,
	Difference.. .. = <u>+0.013 N.M.</u>



S.S. "SILVERTOWN."

HOUR. P.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
	THURSDAY, SEPTEMBER 1st, 1892— <i>contd.</i>
	Patent log=131·6 N.M. TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM F. NORONHA HUT=151·632 N.M. Depth=2500 fms. Position { Lat. 2° 2'·9 S. of splice { Long. 31° 2'·9 W.
8.0	Moderate SE by S wind. Fine, but cloudy. Moderate sea and swell from SE. Bar. 30·170 (80° F.). Temp. 77°·5 F. dry, 74°·3 wet. Sea surface=78° F. 2·779 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=134 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=154·411 N.M. Depth=2500 fms. Drum=43½ revs. per min.=7·7 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2584 lbs. Dynamo- meter=34 cwt. Strophometer=37 revs.
8.30	6·711 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=137·3 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=158·343 N.M. Depth=2500 fms. Drum=44 revs. per min.=7·78 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2584 lbs. Dynamo- meter=35 cwt. Strophometer=36 to 42 revs.
8.44	Weight on brake levers increased to 2716 lbs.
9.0	10·641 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=140·5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=162·273 N.M. Depth=2500 fms. Drum=44 revs. per min.=7·79 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2716 lbs. Dynamo- meter=34 cwt. Strophometer=39 to 43 revs.
9.30	14·560 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=143·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=166·192 N.M. Depth=2550 fms. Drum=44 revs. per min.=7·79 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2716 lbs. Dynamo- meter=35 cwt. Strophometer=38 to 43 revs.
10.0	18·460 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=147·3 N.M.

S.S. "SILVERTOWN."

Hour.  
P.M.

Paying out Light Deep Sea from Fernando—*contd.*

THURSDAY, SEPTEMBER 1st, 1892—*contd.*

TOTAL CABLE LAID FROM F. NORONHA HUT=170·092 N.M.  
Depth=2550 fms.

Drum=44 revs. per min.=7·79 KTS. Ship's engines=45  
revs. per min. Weight on brake levers=2716 lbs. Dynamo-  
meter=35 cwt. Strophometer=38 to 43 revs.

10.30

22·354 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid  
out from after tank. Patent log=150·7 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=173·986 N.M.  
Depth=2550 fms

Drum=43 revs. per min.=7·61 KTS. Ship's engines=44  
revs. per min. Weight on brake levers=2716 lbs. Dynamo-  
meter=33 cwt. Strophometer=38 to 43 revs.

10.32

Weight on brake levers decreased to 2651 lbs.

10.40

" " " 2584 "

11.0

26·219 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid  
out from after tank. Patent log=153·8 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=177·851 N.M.  
Depth=2600 fms.

Drum=43 revs. per min.=7·61 KTS. Ship's engines=44  
revs. per min. Weight on brake levers=2584 lbs. Dynamo-  
meter=35 cwt. Strophometer=39 to 42 revs.

11.30

30·149 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid  
out from after tank. Patent log=157·2 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=181·781 N.M.  
Depth=2600 fms.

Drum=44 revs. per min.=7·79 KTS. Ship's engines=44½  
revs. per min. Weight on brake levers=2584 lbs. Dynamo-  
meter=35 cwt. Strophometer=38 to 42 revs.

11.59

Weight on brake levers increased to 2717 lbs.

MIDNT.

Light SE by S breeze. Fine and clear. Slight swell from  
the SE. Ship rolling slightly.

Bar. 30·170 (79° F.). Temp. 77°·3 F. dry, 73°·8 F. wet. Sea  
surface 77°·5 F.

34·096 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid  
out from after tank. Patent log=160·5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=185·728 N.M.  
Depth=2666 fms.

Drum=44 revs. per min.=7·79 KTS. Ship's engines=44  
revs. per min. Weight on brake levers=2717 lbs. Dynamo-  
meter=34 cwt. Strophometer=37 to 42 revs.

S.S. "SILVERTOWN."

Hour.  
A.M.

Paying out Light Deep Sea from Fernando—*contd.*

FRIDAY, SEPTEMBER 2ND, 1892.

- 0.30 37·990 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=163·8 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=189·622 N.M.  
Depth=2600 fms.  
Drum=44 revs. per min.=7·79 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2717 lbs. Dynamometer=35 cwt. Strophometer=34 to 42 revs.
- 1.0 41·867 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=167·1 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=193·499 N.M.  
Depth=2600 fms.  
Drum=43½ revs. per min.=7·74 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2717 lbs. Dynamometer=35 cwt. Strophometer=38 to 42 revs.
- 1.30 45·862 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=170·5 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=197·494 N.M.  
Depth=2600 fms.  
Drum=45 revs. per min.=7·99 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2717 lbs. Dynamometer=35 cwt. Strophometer=38 to 44 revs.
- 1.38 Weight on brake levers increased to 2849 lbs.
- 2.0 49·851 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=173·8 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=201·483 N.M.  
Depth=2650 fms.  
Drum=45 revs. per min.=7·97 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=2849 lbs. Dynamometer=35 cwt. Strophometer=38 to 45 revs.
- 2.30 53·783 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=177·2 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=205·415 N.M.  
Depth=2650 fms.  
Drum=44½ revs. per min.=7·86 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2849 lbs. Dynamometer=35 cwt. Strophometer=38 to 45 revs.
- 3.0 57·725 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=180·7 N.M.

S.S. "SILVERTOWN."

Hour.  
A.M.

Paying out Light Deep Sea from Fernando—*contd.*

FRIDAY, SEPTEMBER 2ND, 1892—*contd.*

TOTAL CABLE LAID FROM F. NORONHA HUT=209·357 N.M.  
Depth=2650 fms.

Drum=44½ revs. per min.=7·88 KTS. Ship's engines=45  
revs. per min. Weight on brake levers=2849 lbs. Dynamo-  
meter=35 cwt. Strophometer=38 to 43 revs.

3.30 NOTE.—Since 3 a.m. compound on cable has been coming  
off and sticking to the drum.

61·643 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid  
out from after tank. Patent log=184·2 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=213·275 N.M.  
Depth=2600 fms.

Drum=44 revs. per min.=7·82 KTS. Ship's engines=44½  
revs. per min. Weight on brake levers=2849 lbs. Dynamo-  
meter=35 cwt. Strophometer=38 to 43 revs.

4.0 Moderate SSE wind. Fine and clear. Slight SE sea and  
swell.

Bar. 30·100 (78° F.). Temp. 77° F. dry, 73°·8 F. wet. Sea  
surface 78° F.

65·570 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid  
out from after tank. Patent log=187·6 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=217·202 N.M.  
Depth=2600 fms.

Drum=44 revs. per min.=7·84 KTS. Ship's engines=44  
revs. per min. Weight on brake levers=2849 lbs.  
Dynamometer=35 cwts. Strophometer=38 to 43 revs.

4.30 69·546 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid  
out from after tank. Patent log=191·1 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=221·178 N.M.  
Depth=2600 fms.

Drum=45 revs. per min.=7·94 KTS. Ship's engines=44  
revs. per min. Weight on brake levers=2849 lbs.  
Dynamometer=35 cwt. Strophometer=38 to 44 revs.

5.0 73·559 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out  
from after tank. Patent log=194·8 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=225·191 N.M.  
Depth=2550 fms.

Drum=45¼ revs. per min.=8 KTS. Ship's engines=45  
revs. per min. Weight on brake levers=2849 lbs.  
Dynamometer=35 cwt. Strophometer=37 to 44 revs.

S.S. "SILVERTOWN."

HOUR. A.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i> FRIDAY, SEPTEMBER 2ND, 1892— <i>contd.</i>
5.30	<p>77·497 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=198·2 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=229·129 N.M.  Depth=2500 fms.  Drum=44½ revs. per min.=7·8 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2849 lbs. Dynamometer=32 cwt. Strophometer=38 to 44 revs.</p>
6.0	<p>81·401 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=201·7 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=233·033 N.M.  Depth=2400 fms.  Drum=44 revs. per min.=7·78 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=2849 lbs. Dynamometer=32 cwt. Strophometer=36 to 42 revs.  Position by { Lat. 1° 5'·6 S.  observations { Long. 30° 17'·2 W.  Current observed since apparent noon yesterday=N 15° W,  7·3 N.M.=0·4 KT.</p>
6.30	<p>85·256 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=205·3 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=236·888 N.M.  Depth=2300 fms.  Drum=43½ revs. per min.=7·7 KTS. Ship's engines=44 revs. per min. Weight on brake levers=2849 lbs. Dynamometer=34 cwt. Strophometer=33 to 43 revs.</p>
7.0	<p>89·195 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=208·9 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=240·827 N.M.  Depth=2300 fms.  Drum=44½ revs. per min.=7·8 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=2849 lbs. Dynamometer=35 cwt. Strophometer=36 to 42 revs.</p>
7.30	<p>93·231 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=212·6 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=244·863 N.M.  Depth=2300 fms.  Drum=45½ revs. per min.=8 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2849 lbs. Dynamometer=32 cwt. Strophometer=40 revs.</p>
7.40	<p>Weight on brake levers increased to 2917 lbs.</p>



S.S. "SILVERTOWN."

HOURLY.  
A.M.

Paying out Light Deep Sea from Fernando—*contd.*

FRIDAY, SEPTEMBER 2ND, 1892—*contd.*

- 8.0 Moderate SSE breeze. Fine, but overcast. Slight SSE swell.  
Bar. 30.155 (78° F.). Temp. 77°·3 F. dry, 74°·3 F. wet.  
Sea surface 78°·2 F.  
97.285 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=216.3 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=248.917 N.M.  
Depth=2300 fms.  
Drum=45 $\frac{3}{4}$  revs. per min.=8.0 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2917 lbs. Dynamometer=32 cwt. Strophometer=38 to 44 revs.
- 8.30 101.300 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=220 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=252.932 N.M.  
Depth=2300 fms.  
Drum=45 $\frac{1}{4}$  revs. per min.=7.9 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2917 lbs. Dynamometer=30 cwt. Strophometer=36 to 42 revs.
- 8.55 Screwed brakes up a little.
- 9.0 105.345 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=223.8 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=256.977 N.M.  
Depth=2150 fms.  
Drum=44 revs. per min.=7.79 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2917 lbs. Dynamometer=30 cwt. Strophometer=38 to 44 revs.
- 9.24 Weight on brake levers decreased to 2715 lbs.
- 9.30 109.296 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=227.4 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=260.928 N.M.  
Depth=2150 fms.  
Drum=44 $\frac{1}{2}$  revs. per min.=7.87 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2715 lbs. Dynamometer=30 cwt. Strophometer=38 to 42 revs.
- 10.0 113.373 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=231.1 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=265.005 N.M.  
Depth=2150 fms.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour. A.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i> FRIDAY, SEPTEMBER 2ND, 1892— <i>contd.</i>
	Drum=45½ revs. per min.=8·04 kts. Ship's engines=45 revs. per min. Weight on brake levers=2715 lbs. Dynamometer=30 cwt. Strophometer=38 to 44 revs
10.5	Weight on brake levers increased to 2916 lbs.
10.10	Screwed brakes up a little more.
10.20	Weight on brake levers increased to 2983 lbs.
10.30	117·370 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=234·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=269·002 N.M. Depth=2200 fms. Drum=45½ revs. per min.=8·04 kts. Ship's engines=44½ revs. per min. Weight on brake levers=2983 lbs. Dynamometer=30 cwt. Strophometer=39 to 42 revs.
10.39	Weight on brake levers increased to 3077 lbs.
11.0	121·412 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=238·5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=273·044 N.M. Depth=2200 fms. Drum=45½ revs. per min.=8·04 kts. Ship's engines=45 revs. per min. Weight on brake levers=3077 lbs. Dynamometer=30 cwt. Strophometer=36 to 42 revs.
11.30	125·454 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=242·2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=277·086 N.M. Depth=2280 fms. Drum=45½ revs. per min.=8·04 kts. Ship's engines=45 revs. per min. Weight on brake levers=3077 lbs. Dynamometer=31 cwt. Strophometer=40 to 44 revs.
NOON.	Moderate SSE breeze. Fine and bright, but misty. Slight SE sea and swell. Bar. 30·150 (79° F.). Temp. 77°·5 F. dry, 74° F. wet. Sea surface 79° F. 129·508 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=245·9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=281·140 N.M. Depth=2280 fms. Drum=45·6 revs. per min.=8·05 kts. Ship's engines=44 revs. per min. Weight on brake levers=3077 lbs. Dynamometer=30 cwt. Strophometer=39 to 41 revs.

S.S. "SILVERTOWN."

Hour.  
P.M.

Paying out Light Deep Sea from Fernando—*contd.*

FRIDAY, SEPTEMBER 2ND, 1892—*contd.*

- 0.8      Weight on brake levers increased to 3161 lbs.
- 0.22      (Observed noon.) 132·375 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=248·7 N.M.  
             TOTAL CABLE LAID FROM F. NORONHA HUT=284·007 N.M.  
             Depth=2280 fms.  
             CABLE, BY INDICATOR, PAID OUT SINCE OBSERVED NOON  
             YESTERDAY=184·174 N.M.  
             DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON  
             YESTERDAY=168·970 N.M.  
             SLACK=9°/<sub>0</sub>.  
             Position { Lat. 0° 31'·2 S.  
                       { Long. 29° 46'·6 W.  
             No current observed since 6 a.m.
- 0.30      133·485 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=249·8 N.M.  
             TOTAL CABLE LAID FROM F. NORONHA HUT=285·117 N.M.  
             Depth=2280 fms.  
             Drum=45 revs. per min.=7·96 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=3161 lbs. Dynamometer=30 cwt. Strophometer=39 to 42 revs.
- 0.45      Spoke shore and sent the following telegram: "Jeffery Cadiz. Noon, second September. Latitude thirty-one miles South. Longitude twenty-nine degrees forty-eight. Cable out two hundred eighty-four. Advise Silvergray and Vasquez. Benest."
- 1.0      137·506 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=253·5 N.M.  
             TOTAL CABLE LAID FROM F. NORONHA HUT=289·138 N.M.  
             Depth=2300 fms.  
             Drum=45½ revs. per min.=8·04 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3161 lbs. Dynamometer=30 cwt. Strophometer=39 to 42 revs.
- 1.30      141·530 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=257·1 N.M.  
             TOTAL CABLE LAID FROM F. NORONHA HUT=293·162 N.M.  
             Depth=2300 fms.  
             Drum=45 revs. per min.=7·96 KTS. Ship's engines=44 revs. per min. Weight on brake levers=3161 lbs. Dynamometer=31 cwt. Strophometer=38 to 43 revs.  
             Testing room still speaking shore.



S.S. "SILVERTOWN."

HOUR.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	FRIDAY, SEPTEMBER 2ND, 1892— <i>contd.</i>
1.30	Received the following telegram:—"Crouch, St. Louis, to Benest. Tests satisfactory. I have no instructions to leave St. Louis. When must I commence watch?" NOTE.—This apparently is an answer to the telegram sent on 31st August (see Note at 0.50 p.m. on August 31st). And it is evident that Mr. Crouch has not received the telegram sent from Pernambuco on 27th August (see Note at 6.3 p.m., 27.8.92).
2.0	145.566 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=260.9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=297.198 N.M. Depth=2300 fms. Drum=45½ revs. per min.=8.06 KTS. Ship's engines=44 revs. per min. Weight on brake levers=3161 lbs. Dynamometer=35 cwt. Strophometer=38 to 41 revs.
2.10	Weight on brake levers decreased to 3124 lbs.
2.18	" " " " " " 2983 "
2.30	149.513 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=264.6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=301.145 N.M. Depth=2350 fms. Drum=44½ revs. per min.=7.88 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2983 lbs. Dynamometer=34 cwt. Strophometer=38 to 42 revs.
3.0	153.514 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=268.4 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=305.146 N.M. Depth=2400 fms. Drum=45 revs. per min.=8.0 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2983 lbs. Dynamometer=34 cwt. Strophometer=38 to 42 revs.
3.30	157.550 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=272.2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=309.182 N.M. Depth=2450 fms. Drum=45½ revs. per min.=8.06 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2983 lbs. Dynamometer=34 cwt. Strophometer=38 to 42 revs.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	FRIDAY, SEPTEMBER 2ND, 1892— <i>contd.</i>
4.0	Light SE by S wind. Fine and clear. Slight sea and swell from SE. Bar. 30.080 (78° F.). Temp. 77°·7 F. dry, 73°·2 F. wet. Sea surface 79° F. 161.580 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=275.9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=313.212 N.M. Depth=2400 fms. Drum=45½ revs. per min.=8.06 kts. Ship's engines=45 revs. per min. Weight on brake levers=2983 lbs. Dynamometer=34 cwt. Strophometer=38 to 42 revs.
4.8	Weight on brake levers increased to 3077 lbs.
4.30	165.639 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=279.6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=317.271 N.M. Depth=2400 fms. Drum=45½ revs. per min.=8.06 kts. Ship's engines=45 revs. per min. Weight on brake levers=3077 lbs. Dynamometer=33 cwt. Strophometer=36 to 42 revs.
4.40	Weight on brake levers increased to 3124 lbs.
5.0	169.596 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=283.4 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=321.228 N.M. Depth=2350 fms. Drum=45 revs. per min.=7.96 kts. Ship's engines=45 revs. per min. Weight on brake levers=3124 lbs. Dynamometer=32 cwt. Strophometer=34 to 41 revs.
5.28	Weight on brake levers increased to 3160 lbs.
5.30	173.484 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=287.1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=325.116 N.M. Depth=2300 fms. Drum=44 revs. per min.=7.7 kts. Ship's engines=45 revs. per min. Weight on brake levers=3160 lbs. Dynamometer=30 cwt. Strophometer=36 to 41 revs.
5.47	Weight on brake levers increased to 3196 lbs.
6.0	177.402 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=290.9 N.M.

S.S. "SILVERTOWN."

HOOR.  
P.M.

Paying out Light Deep Sea from Fernando—*contd.*

FRIDAY, SEPTEMBER 2ND, 1892—*contd.*

TOTAL CABLE LAID FROM F. NORONHA HUT=329·034 N.M.  
Depth=2300 fms.

Drum=44 revs. per min.=7·79 KTS. Ship's engines=45  
revs. per min. Weight on brake levers=3196 lbs. Dynamo-  
meter=30 cwt. Strophometer=36 to 42 revs.

6.12 178·907 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid  
out from after tank. Patent log=292·3 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=330·539 N.M.  
Depth=2300 fms.

CHANGED COURSE TO N 74° E.

CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 39° E  
=230·706 N.M.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE,  
N 39° E=214·460 N.M.

SLACK=7·57%/. (For Courses made good see Position  
Sheet.)

Position { Lat. 0° 3'·0 N.  
          { Long. 29° 16'·6 W.

6.20 Weight on brake levers decreased to 3111 lbs.

6.30 181·187 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid  
out from after tank. Patent log=294·5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=332·819 N.M.  
Depth=2300 fms.

Drum=42½ revs. per min.=7·56 KTS. Ship's engines=44  
revs. per min. Weight on brake levers=3111 lbs. Dynamo-  
meter=30 cwt. Strophometer=38 to 42 revs.

Position { Lat. 0° 3'·6 N.  
by stars { Long. 29° 14'·5 W.

Current observed since apparent noon=N 23° E, 2·1 N.M.=  
0·3 KT.

7.0 184·969 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid  
out from after tank. Patent log=298·0 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=336·601 N.M.  
Depth=2300 fms.

Drum=42½ revs. per min.=7·6 KTS. Ship's engines=  
44½ revs. per min. Weight on brake levers=3111 lbs.  
Dynamometer=30 cwt. Strophometer=37 to 42 revs.  
Since 5.0 p.m. pumped water out of fore ballast tank.

7.30 188·790 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid  
out from after tank. Patent log=301·50 N.M.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	FRIDAY, SEPTEMBER 2ND, 1892— <i>contd.</i>
	TOTAL CABLE LAID FROM F. NORONHA HUT=340·422 N.M. Depth=2300 fms. Drum=43½ revs. per min.=7·6 KTS. Ship's engines=44 revs. per min. Weight on brake levers=3111 lbs. Dynamometer=32 cwt. Strophometer=34 to 42 revs.
7 58	Weight on brake levers increased to 3158 lbs.
8.0	Moderate breeze from SE by S. Fine and clear. Slight dew. Slight SSE'y sea and swell. Bar 30·120 (78° F.). Temp. 77°·4 F. dry, 73°·0 F. wet. Sea surface 78°·0 F. 192·596 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=305·0 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=344·228 N.M. Depth=2300 fms. Drum=43 revs. per min.=7·611 KTS. Ship's engines=44 revs. per min. Weight on brake levers=3158 lbs. Dynamometer=30 cwt. Strophometer=36 to 41 revs.
8.5	Weight on brake levers increased to 3194 lbs.
8.30	196·469 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=308·6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=348·101 N.M. Depth=2300 fms. Drum=43 revs. per min.=7·61 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3194 lbs. Dynamometer=30 cwt. Strophometer=35 to 41 revs.
9.0	200·364 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=312·2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=351·996 N.M. Depth=2300 fms. Drum=44 revs. per min.=7·79 KTS. Ship's engines=44 revs. per min. Weight on brake levers=3194 lbs. Dynamometer=28 cwt. Strophometer=38 to 41 revs.
9.30	204·223 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=315·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=355·855 N.M. Depth=2300 fms. Drum=43½ revs. per min.=7·7 KTS. Ship's engines=44 revs. per min. Weight on brake levers=3194 lbs. Dynamometer=29 cwt. Strophometer=39 to 42 revs.

S.S. "SILVERTOWN."

<p>Hour. P.M.</p>	<p>Paying out Light Deep Sea from Fernando—<i>contd.</i></p>
	<p>FRIDAY, SEPTEMBER 2ND, 1892—<i>contd.</i></p>
<p>10.0</p>	<p>208·138 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=319·4 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=359·770 N.M.  Depth=2300 fms.  Drum=43½ revs. per min.=7·7 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=3194 lbs. Dynamometer=28 cwt. Strophometer=38 to 42 revs.</p>
<p>10.30</p>	<p>212·144 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=323·0 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=363·776 N.M.  Depth=2300 fms.  Drum=44½ revs. per min.=7·88 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=3194 lbs. Dynamometer=28 cwt. Strophometer=39 to 43 revs.</p>
<p>11.0</p>	<p>216·059 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=326·7 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=367·691 N.M.  Depth=2300 fms.  Drum=43½ revs. per min.=7·7 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=3194 lbs. Dynamometer=28 cwt. Strophometer=38 to 41 revs.</p>
<p>11.30</p>	<p>219·857 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=330·4 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=371·489 N.M.  Depth=2100 fms.  Drum=43 revs. per min.=7·61 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=3194 lbs. Dynamometer=29 cwt. Strophometer=39 to 42 revs.</p>
<p>MIDNT.</p>	<p>Moderate SE by S breeze. Fine, but cloudy and hazy. Dew falling. Moderate SSE swell.  Bar. 30·125 (77° F.). Temp. 77° F. dry, 72°·8 F. wet. Sea surface 77°·5 F.  223·686 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=333·9 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=375·318 N.M.  Depth=2000 fms.  Drum=43 revs. per min.=7·61 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=3194 lbs. Dynamometer=25 cwt. Strophometer=38 to 42 revs.</p>



S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
A.M.	SATURDAY, SEPTEMBER 3RD, 1892.
0.15	Spoke Fernando and sent the following telegrams:— 1. "Crouch, St. Louis. Watch for signals from noon on Friday, ninth. Collect letters from Dakar; send off when ship arrives at St. Louis. Please repeat this message. Benest, 2nd September." 2. "Anglicus, Pernambuco. Message of 27th to Crouch, St. Louis, not reached. Benest, second."
0.30	227·504 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=337·5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=379·136 N.M. Depth=2000 fms. Drum=43 revs. per min.=7·62 kts. Ship's engines=44½ revs. per min. Weight on brake levers=3194 lbs. Dynamometer=25 cwt. Strophometer=38 to 42 revs.
1.0	231·262 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=341·1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=382·894 N.M. Depth=2000 fms. Drum=42½ revs. per min.=7·5 kts. Ship's engines=44½ revs. per min. Weight on brake levers=3194 lbs. Dynamometer=28 cwt. Strophometer=38 to 41 revs.
1.20	233·780 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=343·6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=385 412 N.M. Depth=1900 fms. CHANGED COURSE TO N 35° E. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 74° E =54·873 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE N 74° E =50·840 N.M. SLACK=7·93%. (For Course made good see Position Sheet.) Position { Lat. 0° 16'·4 N. Long. 28° 27'·6 W.
1.30	235·121 N.M. of Light Deep Sea, No. 2147, Sec. "6," paid out from after tank. Patent log=344·9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=386·753 N.M. Depth=1900 fms. Drum=43½ revs. per min.=7·7 kts. Ship's engines=44½ revs. per min. Weight on brake levers=3194 lbs. Dynamometer=28 cwt. Strophometer=39 to 43 revs.

S.S. "SILVERTOWN."

Hour.  
A.M.

Paying out Light Deep Sea from Fernando—*contd.*

SATURDAY, SEPTEMBER 3RD, 1892—*contd.*

1.37 SPLICE in Light Deep Sea, No. 2147, between Sec. "6," and Sec. "7 pt. A," from after tank, passed off drum.  
Light Deep Sea, No. 2147, Sec. "6," paid out  
by Drum measurement .. .. = 235·968 N.M.  
Light Deep Sea, No. 2147, Sec. "6," paid out  
by Factory measurement .. .. = 236·270 ,,

Difference.. .. = - 0·302 N.M.

TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM FERNANDO NORONHA HUT=387·902 N.M. Patent log=345·8 N.M.

Depth=1900 fms.

Position { Lat. 0° 18'·1 N.  
of splice { Long. 28° 26'·3 W.

NOTE.—The difference between the Factory and Drum measurements of Sec. "6" is very probably due to the layers of compound which have from time to time gathered on the drum (the cable running over a drum of increased circumference).

2.0 3·086 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. A," paid out from after tank. Patent log=348·8 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=390·988 N.M.  
Depth=2000 fms.

Drum=44½ revs. per min.=7·9 kts. Ship's engines=46 revs. per min. Weight on brake levers=3194 lbs. Dynamo-meter=28 cwt. Strophometer=38 to 46 revs.

2.21 SPLICE in Light Deep Sea, No. 2147, between Sec. "7 pt. A," and Sec. "10 pt. A," from after tank, passed off drum.

Light Deep Sea, No. 2147, pt. Sec. "7" (pt. A),  
paid out by Drum measurement .. .. = 5·844 N.M.  
Light Deep Sea, No. 2147, pt. Sec. "7" (pt. A),  
paid out by Factory measurement.. .. = 5·846 ,,

Difference.. .. = - 0·002 N.M.

TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM F. NORONHA HUT=393·748 N.M. Patent log=351·6 N.M.

Depth=2000 fms.

Position { Lat. 0° 22'·7 N.  
of splice { Long. 28° 23'·0 W.

S.S. "SILVERTOWN."

HOUR. A M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
SATURDAY, SEPTEMBER 3RD, 1892— <i>contd.</i>	
2.30	<p>1·200 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. A," paid out from after tank. Patent log=352·7 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=394·948 N.M.  Depth=2000 fms.  Drum=45 revs. per min.=7·9 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3194 lbs. Dynamometer=28 cwt. Strophometer=38 to 42 revs.</p>
3.0	<p>5·110 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. A," paid out from after tank. Patent log=356·6 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=398·858 N.M.  Depth=2000 fms.  Drum=44½ revs. per min.=7·9 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=3194 lbs. Dynamometer=28 cwt. Strophometer=38 to 42 revs.</p>
3.30	<p>9·060 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. A," paid out from after tank. Patent log=360·3 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=402·808 N.M.  Depth=2000 fms.  Drum=44½ revs. per min.=7·9 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3194 lbs. Dynamometer=28 cwt. Strophometer=39 to 43 revs.</p>
4.0	<p>Moderate SSE wind. Fine and clear. Moderate SSE sea and swell.  Bar. 30·100 (77° F.). Temp. 76°·4 F. dry, 72°·8 F. wet.  Sea surface 77°·2 F.  13·040 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. A," paid out from after tank. Patent log=364·3 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=406·788 N.M.  Depth=2000 fms.  Drum=45 revs. per min.=7·96 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3194 lbs. Dynamometer=28 cwt. Strophometer=39 to 44 revs.</p>
4.30	<p>17·032 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. A," paid out from after tank. Patent log=368·3 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=410·780 N.M.  Depth=2000 fms.  Drum=45½ revs. per min.=8·05 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3194 lbs. Dynamometer=28 cwt. Strophometer=37 to 44 revs.</p>



S.S. "SILVERTOWN."

Hour. A.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
	SATURDAY, SEPTEMBER 3RD, 1892— <i>contd.</i>
5.0	20·991 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. A," paid out from after tank. Patent log=372·2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=414·739 N.M. Depth=1900 fms. Drum=44½ revs. per min.=7·9 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3194 lbs. Dynamometer=28 cwt. Strophometer=38 to 43 revs.
5.30	25·077 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. A," paid out from after tank. Patent log=376·1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=418·825 N.M. Depth=1900 fms. Drum=46 revs. per min.=8·16 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=3194 lbs. Dynamometer=26 cwt. Strophometer=38 to 45 revs.
5.40	SPLICE in Light Deep Sea, No. 2147, between Sec. "10 pt. A" and Sec. "9A," from after tank, passed off drum. Light Deep Sea, No. 2147, pt. Sec. "10" (pt. A.), paid out by Drum measurement.. 26·481 N.M. Light Deep Sea, No. 2147, pt. Sec. "10" (pt. A.), paid out by Factory measurement 26·537 .. <div style="text-align: right;">Difference.. .. = — 0·056 N.M.</div> TOTAL CABLE, by Factory measurement, LAID FROM FERNANDO NORONHA HUT=420·285 N.M. Patent log=377·4 N.M. Depth=1900 fms. Position { Lat. 0° 43'·0 N. of splice { Long. 28° 8'·0 W.
5.44	Weight on brake levers increased to 3231 lbs.
6.0	2·664 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=380·0 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=422·949 N.M. Depth=1900 fms. Drum=45 revs. per min.=7·965 KTS. Ship's engines=44 revs. per min. Weight on brake levers=3231 lbs. Dynamometer=28 cwt. Strophometer=35 to 44 revs. Position by { Lat. 0° 44'·7 N. observations { Long. 28° 6'·7 W. Current observed since 6.30 p.m. yesterday=S 16° W, 2·2 N.M.

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
A.M.	SATURDAY, SEPTEMBER 3RD, 1892— <i>contd.</i>
6.30	6·679 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=383·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=426·964 N.M. Depth=1900 fms. Drum=45 revs. per min.=7·965 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3231 lbs. Dynamometer=28 cwt. Strophometer=38 to 44 revs.
7.0	10·694 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=387·7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=430·979 N.M. Depth=1900 fms. Drum=45 revs. per min.=7·965 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=3231 lbs. Dynamometer=28 cwt. Strophometer=36 to 44 revs.
7.30	14·690 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=391·6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=434·975 N.M. Depth=2000 fms. Drum=45 revs. per min.=7·965 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3231 lbs. Dynamometer=28 cwt. Strophometer=38 to 42 revs.
8.0	Light SSE wind. Fine, but cloudy. Moderate sea and swell from SSE. Bar. 30·130 (78° F.). Temp. 77°·3 F. dry, 73° F. wet. Sea surface 78°·3 F. 18·699 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=395·5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=438·984 N.M. Depth=2000 fms. Drum=45 revs. per min.=7·965 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3231 lbs. Dynamometer=28 cwt. Strophometer=38 to 42 revs.
8.30	22·793 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=399·5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=443·078 N.M. Depth=2000 fms. Drum=45½ revs. per min.=8·05 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=3231 lbs. Dynamometer=28 cwt. Strophometer=39 to 42 revs.
9.0	26·986 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=403·4 N.M.

S.S. "SILVERTOWN."

<p>Hour. A.M.</p>	<p>Paying out Light Deep Sea from Fernando—<i>contd.</i></p>
	<p>SATURDAY, SEPTEMBER 3RD, 1892—<i>contd.</i></p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=447·271 N.M. Depth=2000 fms. Drum = 48 revs. per min.=8·5 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3231 lbs. Dyna- mometer=28 cwt. Strophometer=40 to 44 revs.</p>
9.30	<p>31·049 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=407·1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=451·334 N.M. Depth=2000 fms. Drum=46 revs. per min.=8·14 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3231 lbs. Dyna- mometer=28 cwt. Strophometer=38 to 42 revs.</p>
10.0	<p>35·075 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=410·9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=455·360 N.M. Depth=2000 fms. Drum=46 revs. per min.=8·14 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3231 lbs. Dyna- mometer=28 cwt. Strophometer=38 to 43 revs.</p>
10.5	<p>Weight on brake levers decreased to 2781 lbs.</p>
10.30	<p>39·300 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=414·9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=459·585 N.M. Depth=2000 fms. Drum=47½ revs. per min.=8·4 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2781 lbs. Dyna- mometer=24 cwt. Strophometer=39 to 45 revs.</p>
10.32	<p>Weight on brake levers increased to 2981 lbs.</p>
10.54	<p>" " " " " " 3231 "</p>
11.0	<p>43·690 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=419·0 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=463·975 N.M. Depth=1950 fms. Drum=49½ revs. per min.=8·75 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3231 lbs. Dyna- mometer=24 cwt. Strophometer=40 to 46 revs.</p>
11.30	<p>47·933 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=422·9 N.M.</p>

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
A.M.	SATURDAY, SEPTEMBER 3RD, 1892— <i>contd.</i>
	TOTAL CABLE LAID FROM F. NORONHA HUT=468·218 N.M. Depth=1950 fms. Drum=48 revs. per min.=8·5 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3231 lbs. Dyna- mometer=25 cwt. Strophometer=39 to 44 revs.
11.58	Weight on brake levers decreased to 3148 lbs. Temperature in main cable tank=79° F.
NOON.	Moderate SSE breeze. Fine, but cloudy. Moderate de- creasing sea and swell from SE'd. Bar. 30·150 (80° F.). Temp. 77°·8 F. dry, 74° F. wet. Sea surface 79°·3 F. 52·001 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=426·7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=472·286 N.M. Depth=1950 fms. Drum=46 revs. per min.=8·14 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3148 lbs. Dyna- mometer=25 cwt. Strophometer=38 to 43 revs.
P.M.	(Observed noon.) 53·477 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=428·2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=473·762 N.M. Depth=1950 fms. CABLE, BY INDICATOR, CORRECTED, PAID OUT SINCE OBSERVED NOON YESTERDAY=189·755 N.M. DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=177·380 N.M. SLACK=7°/°. Position { Lat. 1° 22'·0 N. { Long. 27° 40'·0 W. Current observed since 6 a.m.=S 70° W, 2·3 N.M.=0·4 KT
0.11	
0.30	56·214 N.M. of Light Deep Sea, No. 2147 Sec. "9A," paid out from after tank. Patent log=430·6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=476·499 N.M. Depth=1950 fms. Drum=47½ revs. per min.=8·4 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3148 lbs. Dyna- mometer=25 cwt. Strophometer=42 to 46 revs.
1.0	60·439 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=434·5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=480·724 N.M. Depth=1950 fms.

S.S. "SILVERTOWN."

HOUR. P.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
	SATURDAY, SEPTEMBER 3RD, 1892— <i>contd.</i>
	Drum=47½ revs. per min.=8.4 KTS. Ship's engines=45½ revs. per min. Weight on brake levers=3148 lbs. Dynamometer=25 cwt. Strophometer=40 to 45 revs.
1.30	<p>64.626 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=438.4 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=484.911 N.M.</p> <p>Depth=1950 fms.</p> <p>Drum=47½ revs. per min.=8.4 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3148 lbs. Dynamometer=25 cwt. Strophometer=40 to 43 revs.</p>
2.0	<p>68.894 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=442.3 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=489.179 N.M.</p> <p>Depth=2000 fms.</p> <p>Drum=48 revs. per min.=8.52 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3148 lbs. Dynamometer=25 cwt. Strophometer=43 to 47 revs.</p> <p>Tests taken on all cable in main tank; results very satisfactory.</p>
2.30	<p>73.063 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=446.2 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=493.348 N.M.</p> <p>Depth=2000 fms.</p> <p>Drum=47 revs. per min.=8.32 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3148 lbs. Dynamometer=25 cwt. Strophometer=38 to 43 revs.</p>
3.0	<p>77.220 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=449.9 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=497.505 N.M.</p> <p>Depth=2000 fms.</p> <p>Drum=47 revs. per min.=8.30 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3148 lbs. Dynamometer=26 cwt. Strophometer=38 to 43 revs.</p>
3.30	<p>81.339 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=453.9 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=501.624 N.M.</p> <p>Depth=2000 fms.</p> <p>Drum=46½ revs. per min.=8.23 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3148 lbs. Dynamometer=26 cwt. Strophometer=39 to 44 revs.</p>



S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	SATURDAY, SEPTEMBER 3RD, 1892— <i>contd.</i>
4.0	Moderate S'ly wind. Fine and clear. Moderate SSE sea and swell. Bar. 30.065 (78° F.). Temp. 77°·3 F. dry, 73°·5 F. wet. Sea surface 78°·5 F.  85.333 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=457.6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=505.618 N.M. Depth=2000 fms. Drum=45 revs. per min.=7.99 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3148 lbs. Dynamometer=26 cwt. Strophometer=40 to 43 revs.
4.2	Weight on brake levers decreased to 2914 lbs.
4.30	89.322 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=461.5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=509.607 N.M. Depth=2000 fms. Drum=45 revs. per min.=7.965 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2914 lbs. Dynamometer=26 cwt. Strophometer=38 to 41 revs.
5.0	93.346 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=465.2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=513.631 N.M. Depth=2000 fms. Drum=45½ revs. per min.=7.98 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2914 lbs. Dynamometer=26 cwt. Strophometer=38 to 44 revs.
5.2	Weight on brake levers increased to 2981 lbs.
5.12	" " " " " " 3148 ,
5.26	" " " " decreased ,, 3075 ,,
5.30	97.397 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=469.0 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=517.682 N.M. Depth=2000 fms. Drum=45½ revs. per min.=7.9 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3075 lbs. Dynamometer=25 cwt. Strophometer=39 to 42 revs.

S.S. "SILVERTOWN."

HOOR.

P.M.

Paying out Light Deep Sea from Fernando—*contd.*

SATURDAY, SEPTEMBER 3RD, 1892—*contd.*

- 6.0 101.498 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=472.7 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=521.783 N.M.  
Depth=2000 fms.  
Drum=46 revs. per min.=8.142 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3075 lbs. Dynamo-meter=25 cwt. Strophometer=38 to 44 revs.  
Position by { Lat. 2° 0' 6 N.  
observations { Long. 27° 12' 5 W.  
Current observed since apparent noon=N 10° E, 4.1 N.M.=0.7 KT.
- 6.22 Weight on brake levers increased to 3111 lbs.
- 6.30 3148 "  
105.697 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=476.6 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=525.982 N.M.  
Depth=2000 fms.  
Drum=47 revs. per min.=8.39 KTS. Ship's engines=44 revs. per min. Weight on brake levers=3148 lbs. Dynamo-meter=25 cwt. Strophometer=38 to 42 revs.
- 6.50 Weight on brake levers increased to 3195 lbs.
- 7.0 109.896 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=480.3 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=530.091 N.M.  
Depth=2100 fms.  
Drum=46½ revs. per min.=8.2 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3195 lbs. Dynamo-meter=25 cwt. Strophometer=38 to 42 revs.
- 7.14 Weight on brake levers increased to 3231 lbs.
- 7 17 Weight on brake levers increased to 3266 lbs.
- 7.30 113.836 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=484.4 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=534.121 N.M.  
Depth=2200 fms.

S.S. "SILVERTOWN."

Hour.  
P.M.

Paying out Light Deep Sea from Fernando—*contd.*

SATURDAY, SEPTEMBER 3RD, 1892—*contd.*

Drum= $45\frac{1}{2}$  revs. per min.=8.0 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3266 lbs. Dynamometer=25 cwt. Strophometer=37 to 43 revs.

8.0 Moderate SSE breeze. Fine and clear. Moderate SE sea and swell.

Bar. 30.140 (78° F.). Temp. 77°·3 F. dry, 73°·3 F. wet. Sea surface 79° F.

117.848 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=488.3 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=538.133 N.M. Depth=2200 fms.

Drum= $45\frac{1}{4}$  revs. per min.=7.9 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3266 lbs. Dynamometer=25 cwt. Strophometer=38 to 44 revs.

8.2 Weight on brake levers increased to 3302 lbs.

8.22 " " " " decreased ,, 3065 ,,

8.30 121.858 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=492.1 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=542.143 N.M. Depth=2200 fms.

Drum=46 revs. per min.=8.1 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3065 lbs. Dynamometer=24 cwt. Strophometer=39 to 42 revs.

8.36 Weight on brake levers decreased to 2981 lbs.

9.0 125.894 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=496.0 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=546.179 N.M. Depth=2250 fms.

Drum=46 revs. per min.=8.14 KTS. Ship's engines= $45\frac{1}{2}$  revs. per min. Weight on brake levers=2981 lbs. Dynamometer=23 cwt. Strophometer=39 to 43 revs.

9.30 130.053 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=499.9 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=550.338 N.M. Depth=2250 fms.

Drum=47 revs. per min.=8.32 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2981 lbs. Dynamometer=22 cwt. Strophometer=41 to 44 revs.



S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	SATURDAY, SEPTEMBER 3RD, 1892— <i>contd.</i>
10.0	<p>134·160 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=503·8 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=554·445 N.M.  Depth=2250 fms.  Drum=46½ revs. per min.=8·25 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2981 lbs. Dynamometer=22 cwt. Strophometer=40 to 43 revs.</p>
10.30	<p>138·240 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=507·7 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=558·525 N.M.  Depth=2250 fms.  Drum=46 revs. per min.=8·14 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2981 lbs. Dynamometer=22 cwt. Strophometer=40 to 43 revs.</p>
11.0	<p>142·294 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=511·5 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=562·579 N.M.  Depth=2260 fms.  Drum=46 revs. per min.=8·14 KTS. Ship's engines=45½ revs. per min. Weight on brake levers=2981 lbs. Dynamometer=22 cwt. Strophometer=40 to 43 revs.</p>
11.30	<p>146·404 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=515·5 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=566·689 N.M.  Depth=2260 fms.  Drum=46½ revs. per min.=8·25 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=2981 lbs. Dynamometer=23 cwt. Strophometer=40 to 43 revs.</p>
11.48	Weight on brake levers decreased to 2848 lbs.
MIDNT.	<p>Light S'y wind. Fine, but cloudy and hazy. Slight SE swell.  Bar. 30·130 (77° F.). Temp. 77° F. dry, 73°·9 F. wet. Sea surface 78°·8 F.  150·475 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=519·4 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=570·760 N.M.  Depth=2260 fms.  Drum=46 revs. per min.=8·14 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=2848 lbs. Dynamometer=22 cwt. Strophometer=40 to 43 revs.</p>

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
SUNDAY, SEPTEMBER 4TH, 1892.	
A.M.	
0.30	<p>154·390 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=523·3 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=574·675 N.M.  Depth=2300 fms.  Drum=44 revs. per min.=7·79 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2848 lbs.  Dynamometer=22 cwt. Strophometer=40 to 43 revs.</p>
0.35	Weight on brake levers decreased to 2646 lbs.
1.0	<p>158 352 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=527·1 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=578·637 N.M.  Depth=2350 fms.  Drum=44½ revs. per min.=7·92 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2646 lbs.  Dynamometer=22 cwt. Strophometer=38 to 43 revs.</p>
1.30	<p>162·424 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=531·1 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=582·709 N.M.  Depth=2350 fms.  Drum=46 revs. per min.=8·14 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2646 lbs. Dynamometer=22 cwt. Strophometer=42 revs.</p>
2.0	<p>166·483 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=535·0 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=586·768 N.M.  Depth=2350 fms.  Drum=45½ revs. per min.=8·10 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2646 lbs.  Dynamometer=22 cwts. Strophometer=42 revs.</p>
2.30	<p>170·487 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=538·9 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=590·772 N.M.  Depth=2400 fms.  Drum=45 revs. per min.=8·0 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2646 lbs.  Dynamometer=22 cwt. Strophometer=42 revs.</p>
2.33	Weight on brake levers decreased to 2581 lbs.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
SUNDAY, SEPTEMBER 4TH, 1892— <i>contd.</i>	
A.M.	
3.0	174·508 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=542·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=594·793 N.M. Depth=2400 fms.  Drum=45 revs. per min.=8·0 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2581 lbs. Dynamometer=22 cwt. Strophometer=42 revs.
3.27	Weight on brake levers decreased to 2516 lbs.
3.30	178·453 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=546·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=598·738 N.M. Depth=2350 fms.  Drum=44½ revs. per min.=7·88 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2516 lbs. Dynamometer=21 cwt. Strophometer=42 revs.
4.0	Light SSW wind. Fine and clear. Slight SE swell. Bar. 30·080 (78° F.). Temp. 77° F. dry, 73°·2 F. wet. Sea surface 79°·5 F. 182·438 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=550·7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=602·723 N.M. Depth=2300 fms.  Drum=45 revs. per min.=7·96 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2516 lbs. Dynamometer=21 cwt. Strophometer=40 revs.
4.30	186·527 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=554·6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=606·812 N.M. Depth=2250 fms.  Drum=46 revs. per min.=8·142 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2516 lbs. Dynamometer=21 cwt. Strophometer=41 revs.
5.0	190·546 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=558·6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=610·831 N.M. Depth=2200 fms.  Drum=45½ revs. per min.=7·99 KTS. Ship's engines=45½ revs. per min. Weight on brake levers=2516 lbs. Dynamometer=21 cwt. Strophometer=40 revs.

S.S. "SILVERTOWN."

HOUR.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
SUNDAY, SEPTEMBER 4TH, 1892— <i>contd.</i>	
A.M.	
5.30	<p>194·475 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=562·6 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=614·760 N.M.  Depth=2200 fms.  Drum=43½ revs. per min.=7·7 KTS. Ship's engines=45 revs. per min. Weight on brake levers=2516 lbs. Dynamo-meter=21 cwt. Strophometer=37 to 42 revs.</p>
6.0	<p>198·364 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=566·4 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=618·649 N.M.  Depth=2200 fms.  Drum=44 revs. per min.=7·788 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2516 lbs. Dynamo-meter=21 cwt. Strophometer=38 to 41 revs.  Position by { Lat. 3° 14' 5 N.  observations { Long. 26° 22' 6 W.  Current observed since 6 p.m. yesterday=S 86° W, 3·6 N.M.=0·3 KT.</p>
6.30	<p>202·303 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=570·4 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=622·588 N.M.  Depth=2150 fms.  Drum=44½ revs. per min.=7·9 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2516 lbs. Dynamo-meter=21 cwt. Strophometer=38 to 40 revs.</p>
6.37	Weight on brake levers increased to 2713 lbs.
7.0	<p>206·191 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=574·2 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=626·476 N.M.  Depth=2150 fms.  Drum=44 revs. per min.=7·79 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2713 lbs. Dynamo-meter=21 cwt. Strophometer=38 to 42 revs.</p>
7.10	Weight on brake levers decreased to 2581 lbs.
7.12	" " " 2516 "
7.30	<p>210·020 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=578·0 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=630·305 N.M.  Depth=2150 fms.</p>

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
A.M.	SUNDAY, SEPTEMBER 4TH, 1892— <i>contd.</i>
	Drum=43 revs. per min.=7.61 kts. Ship's engines=45 revs. per min. Weight on brake levers=2516 lbs. Dynamo-meter=21 cwt. Strophometer=38 to 40 revs.
7.58	Weight on brake levers increased to 2581 lbs.
8.0	Light SSW wind. Fine, but cloudy. Slight Southerly swell. Bar. 30.135 (80° F.). Temp. 78°·2 F. dry, 73°·7 F. wet. Sea surface 80°·2 F. 213.865 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=581.8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=634.150 N.M. Depth=2100 fms. Drum=43½ revs. per min.=7.7 kts. Ship's engines=45 revs. per min. Weight on brake levers=2581 lbs. Dynamo-meter=21 cwt. Strophometer=38 to 41 revs.
8.10	Weight on brake levers increased to 2713 lbs.
8.30	217.806 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=585.7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=638.091 N.M. Depth=2100 fms. Drum=45 revs. per min.=7.96 kts. Ship's engines=45 revs. per min. Weight on brake levers=2713 lbs. Dynamo-meter=21 cwt. Strophometer=39 to 41 revs.
9.0	221.813 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=589.8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=642.098 N.M. Depth=2100 fms. Drum=45½ revs. per min.=7.99 kts. Ship's engines=46 revs. per min. Weight on brake levers=2713 lbs. Dynamo-meter=21 cwt. Strophometer=38 to 42 revs.
9.30	225.834 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=593.8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=646.119 N.M. Depth=2150 fms. Drum=45½ revs. per min.=7.99 kts. Ship's engines=46 revs. per min. Weight on brake levers=2713 lbs. Dynamo-meter=22 cwt. Strophometer=39 to 42 revs.
10.0	229.816 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=597.9 N.M.



*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
A.M.	SUNDAY, SEPTEMBER 4TH, 1892— <i>contd.</i>
	TOTAL CABLE LAID FROM F. NORONHA HUT=650·101 N.M. Depth=2200 fms. Drum=45 revs. per min.=7·96 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2713 lbs. Dynamo- meter=22 cwt. Strophometer=38 to 42 revs.
10.24	Weight on brake levers increased to 3028 lbs.
10.30	233·717 N.M. of Light Deep Sea, No. 2147, Sec. "9A," paid out from after tank. Patent log=601·6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=654·002 N.M. Depth=2250 fms. Drum=44 revs. per min.=7·79 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3028 lbs. Dynamo- meter=22 cwt. Strophometer=37 to 41 revs.
10.35	SPLICE in Light Deep Sea, No. 2147, between Secs. "9A" and "11A," from after tank, passed off drum. Light Deep Sea, No. 2147, Sec. "9A," paid out by Drum measurement .. = 234·422 N.M. Light Deep Sea, No. 2147, Sec. "9A," paid out by Factory measurement .. = 234·879 .. <div style="text-align: right;">Difference .. .. = - 0·457 N.M.</div> TOTAL CABLE, by Factory measurement, LAID FROM FERNANDO NORONHA HUT = 655·164 N.M. Patent log = 602·5 N.M. Depth=2250 fms. Position { Lat. 3° 40'·4 N. of splice { Long. 26° 6'·6 W.
10.42	Weight on brake levers decreased to 2981 lbs.
11.0	3·095 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=605·7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=658·259 N.M. Depth=2300 fms. Drum=43 revs. per min.=7·61 KTS. Ship's engines=45½ revs. per min. Weight on brake levers=2981 lbs. Dyna- mometer=25 cwt. Strophometer=37 to 40 revs.
11.30	6·921 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=609·7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=662·085 N.M. Depth=2300 fms.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
	SUNDAY, SEPTEMBER 4TH, 1892— <i>contd.</i>
	Drum=43 revs. per min.=7.61 kts. Ship's engines=46 revs. per min. Weight on brake levers=2981 lbs. Dynamometer=26 cwt. Strophometer=37 to 40 revs.
NOON.	Light S'ly wind. Fine, but cloudy. Slight S'ly sea and swell. Bar. 30.150 (83° F.). Temp. 78°·5 F. dry, 74°·5 wet. Sea surface 80°·8 F. 10.866 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=613.6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=666.030 N.M. Depth=2300 fms. Drum=44½ revs. per min.=7.9 kts. Ship's engines=45½ revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=38 to 42 revs.
P.M. 0.4	(Observed noon.) 11.397 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=614.2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=666.561 N.M. Depth=2300 fms. CABLE, BY INDICATOR, CORRECTED, PAID OUT SINCE OBSERVED NOON YESTERDAY=192.799 N.M. DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=176.7 N.M. SLACK=9.1%. Position { Lat. 3° 48'·3 N. { Long. 26° 0'·8 W. Current observed since 6 a.m.=S 59° W, 7.2 N.M.=1.2 kt.
0.30	14.780 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=617.6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=669.944 N.M. Depth=2300 fms. Drum=44 revs. per min.=7.8 kts. Ship's engines=45 revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=38 to 40 revs.
1.0	18.704 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=621.6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=673.868 N.M. Depth=2300 fms. Drum=44 revs. per min.=7.8 kts. Ship's engines=46 revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=38 to 43 revs.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

HOUR.

Paying out Light Deep Sea from Fernando—*contd.*

SUNDAY, SEPTEMBER 4TH, 1892—*contd.*

P.M.

1.30

22·605 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=625·7 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=677·769 N.M.  
Depth=2300 fms.

Drum=44 revs. per min.=7·8 KTS. Ship's engines=45½ revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=38 to 42 revs.

2.0

26·623 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=629·5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=681·787 N.M.  
Depth=2300 fms.

Drum=45½ revs. per min.=8·0 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=38 to 42 revs.

Fernando spoken, and the following messages received:—

1. "Anglicus to Benest. Message Crouch, 27th, handed by Gray to Brazilian Submarine Company and duly forwarded. Enquiries being made."

2. "Relampago to Benest. I watch for signals from noon on Friday, 9th, and collect letters from Dakar and send off when ship arrives at St. Louis. Crouch, 3rd."

3. "Wilson to Benest. Where are ship's letters to go?"

2.15

Sent the following telegram:—"Benest to Wilson. Send ship's letters back to Silvertown factory."

2.30

30·712 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=633·6 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=685·876 N.M.  
Depth=2300 fms.

Drum=46 revs. per min.=8·16 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=38 to 43 revs.

2.35

Got top end of cable, Light Deep Sea, No. 2147, Sec. "7A," in main tank, up on deck and commenced to open it out for splice with the bottom end of cable, Light Deep Sea, No. 2147, Sec. "11A," in after tank.

Tests taken on all cable in main tank, with satisfactory results.

3.0

34·813 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=637·6 N.M.



S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	SUNDAY, SEPTEMBER 4TH, 1892— <i>contd.</i>
	<p>TOTAL CABLE LAID FROM F. NORONHA HUT=689·977 N.M.  Depth=2300 fms.  Drum=46 revs. per min.=8·2 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=38 to 43 revs.</p>
3.15	<p>Continuity tests taken off cable, to allow the splice to be made between cable in main and after tanks. Control test taken every few minutes.</p> <p>Commenced to open out bottom end of cable, Light Deep Sea, No. 2147, Sec. "11A," in after tank for splice with top end of cable, Light Deep Sea, No. 2147, Sec. "7A," in main tank.</p>
3.30	<p>38·849 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=641·7 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=694·013 N.M.  Depth=2300 fms.  Drum=45 revs. per min.=8·06 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=39 to 43 revs.</p>
4.0	<p>Moderate SW wind. Fine, but overcast and gloomy weather. Moderate confused swell.</p> <p>Bar. 30·080 (82° F.). Temp. 78°·9 F. dry, 74°·4 F. wet. Sea surface 80°·7 F.</p> <p>42·784 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=645·6 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=697·948 N.M.  Depth=2300 fms.  Drum=44½ revs. per min.=7·8 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=40 revs.</p>
4.5	<p>Commenced joint between Light Deep Sea, No. 2147, Sec. "11A," in after tank, and Light Deep Sea, No. 2147, Sec. "7A," in main tank.</p> <p>4 fms.=0·004 N.M. cut off the top end of the cable in main tank for dry end, thus reducing the length of Sec. "7A" to 160·294 N.M.</p> <p>5 fms.=0·005 N.M. for dry end, and 14 fms.=0·014 N.M. for this splice cut off the bottom end of the cable in after tank, thus reducing the length of Sec. "11A" to 232·200 N.M.</p>

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
SUNDAY, SEPTEMBER 4TH, 1892— <i>contd.</i>	
P.M.	
4.30	46·758 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=649·6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=701·922 N.M. Depth=2300 fms. Drum=45 revs. per min.=7·96 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=37 to 42 revs.
4.32	Weight on brake levers increased to 3064 lbs.
4.48	" " " 3158 "
5.0	50·797 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=653·4 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=705·961 N.M. Depth=2300 fms. Drum=45½ revs. per min.=8·0 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3158 lbs. Dynamometer=24 cwt. Strophometer=39 to 42 revs.
5.30	54·848 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=657·4 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=710·012 N.M. Depth=2300 fms. Drum=45¾ revs. per min.=8·10 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3158 lbs. Dynamometer=24 cwt. Strophometer=37 to 43 revs.
5.35	Joint between Sec. "11A," in after tank, and Sec. "7A," in main tank, finished, and tested and passed as satisfactory. Commenced splice. Resumed speaking with Fernando Noronha Hut and testing. Length of cable now in circuit between Testing room and Hut=1682·686 N.M.
6.0	58·973 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=661·4 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=714·137 N.M. Depth=2300 fms. Drum=46½ revs. per min.=8·2 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3158 lbs. Dynamometer=24 cwt. Strophometer=40 to 44 revs.
6.30	63·105 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=665·4 N.M.

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	SUNDAY, SEPTEMBER 4TH, 1892— <i>contd.</i>
	TOTAL CABLE LAID FROM F. NORONHA HUT=718·269 N.M. Depth=2300 fms. Drum=46½ revs. per min.=8·26 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3158 lbs. Dynamo- meter=24 cwt. Strophometer=39 to 42 revs.
6.45	Weight on brake levers decreased to 3075 lbs.
7.0	67·225 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=669·4 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=722·389 N.M. Depth=2300 fms. Drum=46½ revs. per min.=8·26 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3075 lbs. Dyna- mometer=24 cwt. Strophometer=39 to 43 revs.
7.5	Splice between Light Deep Sea, No. 2147, Sec. "11A," in after tank, and Light Deep Sea, No. 2147, Sec. "7A," in main tank, completed, and bight triced up ready for the change of tanks to-morrow afternoon.
7 30	71·364 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=673·3 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=726·528 N.M. Depth=2300 fms. Drum=46½ revs. per min.=8·26 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3075 lbs. Dyna- mometer=24 cwt. Strophometer=40 to 43 revs.
8.0	Light SSW wind. Fine, but overcast. Slight SE swell. Bar. 30·120 (80° F.). Temp. 78°·5 F. dry, 75°·0 F. wet. Sea surface 80°·2 F. 75·524 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=677·3 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=730·688 N.M. Depth=2300 fms. Drum=47 revs. per min.=8·32 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3075 lbs. Dynamo- meter=24 cwt. Strophometer=40 to 42 revs.
8.30	79·618 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=681·4 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=734·782 N.M. Depth=2300 fms.

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	SUNDAY, SEPTEMBER 4TH, 1892— <i>contd.</i>
	Drum=47 revs. per min.=8.32 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3075 lbs. Dynamometer=24 cwt. Strophometer=40 to 43 revs.
9.0	83.740 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=685.5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=738.904 N.M. Depth=2300 fms. Drum=46½ revs. per min.=8.25 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3075 lbs. Dynamometer=24 cwt. Strophometer=40 to 43 revs.
9.30	87.883 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=689.6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=743.047 N.M. Depth=2300 fms. Drum=47 revs. per min.=8.32 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3075 lbs. Dynamometer=24 cwt. Strophometer=40 to 45 revs.
10.0	92.037 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=693.4 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=747.201 N.M. Depth=2300 fms. Drum=47 revs. per min.=8.32 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3075 lbs. Dynamometer=24 cwt. Strophometer=40 to 45 revs.
10.30	96.161 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=697.1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=751.325 N.M. Depth=2300 fms. Drum=46½ revs. per min.=8.25 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3075 lbs. Dynamometer=25 cwt. Strophometer=40 to 45 revs.
11.0	100.244 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=701.2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=755.408 N.M. Depth=2300 fms. Drum=46 revs. per min.=8.14 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3075 lbs. Dynamometer=25 cwt. Strophometer=41 to 44 revs.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

HOOR.  
P.M.

**Paying out Light Deep Sea from Fernando—*contd.***

SUNDAY, SEPTEMBER 4TH, 1892—*ccntd.*

11 30

104·310 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=705·2 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=759·474 N.M.  
Depth=2300 fms.

Drum=46 revs. per min.=8·14 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3075 lbs. Dynamometer=25 cwt. Strophometer=40 to 42 revs.

MIDNT.

Light NW breeze. Overcast and squally, with heavy rain at times. Smooth sea, slight swell.

Bar. 30·130 (79° F.). Temp. 76°·8 F. dry, 75° F. wet. Sea surface 78°·8 F.

108·322 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=709·0 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=763·486 N.M.  
Depth=2300 fms.

Drum=45½ revs. per min.=8·05 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3075 lbs. Dynamometer=25 cwt. Strophometer=40 to 43 revs.

MONDAY, SEPTEMBER 5TH, 1892.

A.M.  
0.30

111·222 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=712·7 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=767·386 N.M.  
Depth=2300 fms.

Drum=44 revs. per min.=7·8 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3075 lbs. Dynamometer=24 cwt. Strophometer=38 to 42 revs.

1.0

116·276 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=716·8 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=771·440 N.M.  
Depth=2300 fms.

Drum=45½ revs. per min.=8·0 KTS. Ship's engines=45 revs. per min. Weight on brake levers=3075 lbs. Dynamometer=24 cwt. Strophometer=39 to 44 revs.

1.30

120·465 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=720·7 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=775·629 N.M.  
Depth=2300 fms.



S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
A.M.	MONDAY, SEPTEMBER 5TH, 1892— <i>contd.</i>
	Drum=47 revs. per min.=8.32 kts. Ship's engines=46 revs. per min. Weight on brake levers=3075 lbs. Dynamometer=24 cwt. Strophometer=40 to 43 revs.
1.37	Weight on brake levers decreased to 2981 lbs.
2.0	124.643 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=724.7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=779.807 N.M. Depth=2300 fms. Drum=47 revs. per min.=8.32 kts. Ship's engines=46½ revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=40 to 45 revs.
2.30	128.764 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=728.7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=783.928 N.M. Depth=2350 fms. Drum=46½ revs. per min.=8.24 kts. Ship's engines=47 revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=41 to 46 revs.
3.0	132.930 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=732.6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=788.094 N.M. Depth=2400 fms. Drum=47 revs. per min.=8.32 kts. Ship's engines=46½ revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=40 to 44 revs.
3.30	137.114 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=736.7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=792.278 N.M. Depth=2400 fms. Drum=47 revs. per min.=8.32 kts. Ship's engines=46 revs. per min. Weight on brake levers=2981 lbs. Dynamometer=24 cwt. Strophometer=40 to 43 revs.
3.40.	Weight on brake levers increased to 3158 lbs.
4.0	Moderate WSW wind. Overcast and rainy weather. Moderate S'y sea and swell. Bar. 30.090 (80° F.). Temp. 77°·7 F. dry, 76° wet Sea surface 80° F 141.279 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=740.7 N.M.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

HOOR.

Paying out Light Deep Sea from Fernando—*contd.*

A.M.

MONDAY, SEPTEMBER 5TH, 1892—*contd.*

TOTAL CABLE LAID FROM F. NORONHA HUT=796·443 N.M.  
Depth=2400 fms.

Drum=47 revs. per min.=8·32 KTS Ship's engines=47  
revs. per min. Weight on brake levers=3158 lbs. Dynamo-  
meter=25 cwt. Strophometer=40 to 43 revs.

4.30

145·377 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid  
out from after tank. Patent log=744·6 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=800·541 N.M.  
Depth=2400 fms.

Drum=46 revs. per min.=8·14 KTS. Ship's engines=46½  
revs. per min. Weight on brake levers=3158 lbs. Dynamo-  
meter=25 cwt. Strophometer=38 to 43 revs.

4.55

Weight on brake levers increased to 3231 lbs.

5.0

149·472 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid  
out from after tank. Patent log=748·3 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=804·636 N.M.  
Depth=2400 fms.

Drum=46½ revs. per min.=8·24 KTS. Ship's engines=46  
revs. per min. Weight on brake levers=3231 lbs. Dynamo-  
meter=25 cwt. Strophometer=40 to 44 revs.

5.6

Weight on brake levers increased to 3303 lbs.

5.30

153·632 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid  
out from after tank. Patent log=752·4 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=808·796 N.M.  
Depth=2400 fms.

Drum=47 revs. per min.=8·32 KTS. Ship's engines=46  
revs. per min. Weight on brake levers=3303 lbs. Dynamo-  
meter=24 cwt. Strophometer=38 to 44 revs.

6.0

157·813 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid  
out from after tank. Patent log=756·5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=812·977 N.M.  
Depth=2400 fms.

Drum=47 revs. per min.=8·32 KTS. Ship's engines=46½  
revs. per min. Weight on brake levers=3303 lbs. Dynamo-  
meter=24 cwt. Strophometer=39 to 44 revs.

6.30

161·999 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid  
out from after tank. Patent log=760·5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=817·163 N.M.  
Depth=2400 fms.

S.S. "SILVERTOWN."

Hour.  
A.M.

**Paying out Light Deep Sea from Fernando—contd.**

MONDAY, SEPTEMBER 5TH, 1892—contd.

Drum= $47\frac{1}{4}$  revs. per min.=8·35 kts. Ship's engines=46 revs. per min. Weight on brake levers=3303 lbs. Dynamometer=24 cwt. Strophometer=40 to 44 revs.

7.0 166·109 N.M. of Light Deep Sea, No 2147, Sec. "11A," paid out from after tank. Patent log=764·4 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=821·273 N.M.  
Depth=2400 fms.

Drum= $46\frac{1}{2}$  revs. per min.=8·24 kts. Ship's engines=46 revs. per min. Weight on brake levers=3303 lbs. Dynamometer=24 cwt. Strophometer=38 to 43 revs.

7.30 170·091 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=768·3 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=825·255 N.M.  
Depth=2400 fms.

Drum=45 revs. per min.=7·96 kts. Ship's engines=46 revs. per min. Weight on brake levers=3303 lbs. Dynamometer=24 cwt. Strophometer=38 to 42 revs.

8.0 Moderate W'ly wind, overcast, with rain at times. Slight SE'ly swell.

Bar. 30·130 (80° F.). Temp. 78°·8 F. dry, 76° F. wet. Sea surface 80°·2 F.

174·157 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=772·4 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=829·321 N.M.  
Depth=2350 fms.

Drum= $45\frac{1}{2}$  revs. per min.=8·05 kts. Ship's engines=46 revs. per min. Weight on brake levers=3303 lbs. Dynamometer=24 cwt. Strophometer=38 to 42 revs.

8.30 177·990 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=776·2 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=833·154 N.M.  
Depth=2350 fms.

Drum=45 revs. per min.=7·9 kts. Ship's engines=46 revs. per min. Weight on brake levers=3303 lbs. Dynamometer=24 cwt. Strophometer=38 to 41 revs.

9.0 181·804 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=780·1 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=836·968 N.M.  
Depth=2350 fms.



*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

HOOR.

Paying out Light Deep Sea from Fernando—*contd.*

A.M.

MONDAY, SEPTEMBER 5TH, 1892—*contd.*

Drum=43 revs per min.=7.61 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3303 lbs. Dynamometer=24 cwt. Strophometer=37 to 40 revs.

9.30

185.843 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=783.9 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=841.007 N.M.  
Depth=2350 fms.

Drum=45½ revs. per min.=8.05 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3303 lbs. Dynamometer=24 cwt. Strophometer=39 to 43 revs.

10.0

189.820 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=787.9 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=844.984 N.M.  
Depth=2350 fms.

Drum=46 revs. per min.=8.14 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3303 lbs. Dynamometer=24 cwt. Strophometer=39 to 44 revs.

10.30

193.983 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=791.6 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=849.147 N.M.  
Depth=2350 fms.

Drum=47 revs. per min.=8.32 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3303 lbs. Dynamometer=25 cwt. Strophometer=40 to 44 revs.

Weight on brake levers decreased to 3230 lbs.

11.0

198.087 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=795.5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=853.251 N.M.  
Depth=2300 fms.

Drum=46½ revs per min.=8.25 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3230 lbs. Dynamometer=25 cwt. Strophometer=40 to 44 revs.

11.30

202.229 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=799.5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=857.393 N.M.  
Depth=2300 fms.

Drum=46½ revs. per min.=8.25 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3230 lbs. Dynamometer=25 cwt. Strophometer=39 to 43 revs.

NOON.

(By engineer's time and by observations.) Light NNW wind. Cloudy, with rain at times. Moderate confused swell.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.  
P.M.

**Paying out Light Deep Sea from Fernando—*contd.***

MONDAY, SEPTEMBER 5TH, 1892—*contd.*

Bar. 30.124 (79° F.). Temp. 78°.4 F. dry, 76° F. wet. Sea surface 80°.3 F.

206.135 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=803.4 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=861.299 N.M.  
Depth=2300 fms.

Drum=46½ revs. per min.=8.25 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3230 lbs. Dynamometer=25 cwt. Strophometer=38 to 42 revs.

CABLE, BY INDICATOR, PAID OUT SINCE OBSERVED NOON YESTERDAY=194.738 N.M.

DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=181.220 N.M.

SLACK=7.46%.

Position { Lat. 6° 11'.1 N  
by D.R. { Long. 24° 8'.8 W } corrected for set.

Sun obscured, no sights obtainable.

Average current observed since noon yesterday=S 28° E, 9.1 N.M.=0.4 KT.

Temp. in main cable tank=79° F.

0.30 209.961 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=807.1 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=865.125 N.M.  
Depth=2300 fms.

Drum=43 revs. per min.=7.6 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3230 lbs. Dynamometer=25 cwt. Strophometer=39 to 42 revs.

0.40 Weight on brake levers decreased to 3158 lbs.

1.0 213.788 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=811.0 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=868.952 N.M.  
Depth=2300 fms.

Drum=43 revs. per min.=7.6 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3158 lbs. Dynamometer=25 cwt. Strophometer=39 to 42 revs.

Spoke Fernando and sent the following messages in Code:—

1. "Robert Gray. 5th September. Latitude six degrees nineteen north. Longitude twenty-four degrees thirteen. Cable laid eight six one knots. Benest."

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour. P.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>  Changing Tanks.  MONDAY, SEPTEMBER 5TH, 1892— <i>contd.</i>
	2. "Silvergray. London. Fifth September. Latitude six degrees nineteen north. Longitude twenty-four degrees thirteen. Cable laid eight six one knots. All well. Benest."
1.30	217·770 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=815·1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=872·934 N.M. Depth=2300 fms. Drum=45 revs per min.=7·9 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3158 lbs. Dynamometer=25 cwt. Strophometer=38 to 42 revs.
2.0	221·686 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=819·0 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=876·850 N.M. Depth=2300 fms. Drum=44½ revs. per min.=7·86 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3158 lbs. Dynamometer=25 cwt. Strophometer=38 to 42 revs.
2.11	Preparing to change from after tank to main tank. Decreased ship's engines to 40 revs. per min.
2.30	225·341 N.M. of Light Deep Sea, No. 2147, Sec. "11A," paid out from after tank. Patent log=822·7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=880·505 N.M. Depth=2300 fms. Drum=41 revs. per min.=7·25 KTS. Ship's engines=40 revs. per min. Weight on brake levers=3158 lbs. Dynamometer=25 cwt. Strophometer=34 to 38 revs.
2.50	Decreased ship's engines to half speed=30 revs. per min.
2.56	Weight on brake levers decreased to 2713 lbs.
3.0	" " " 2451 "
3.2	Decreased ship's engines to "slow"=about 20 revs. per min.
3.40	About one mile of cable left in after tank. Ship's engines=22 revs. per min. Drum=23 revs.=4·0 KTS.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour. P.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>  Changing Tanks.  MONDAY, SEPTEMBER 5TH, 1892— <i>contd.</i>
3.44	Stopped ship's engines.
3.45	Weight on brake levers decreased to 1993 lbs.=29 weights.
3.49	" " " 1795 " =26 "
3.54	" " " 1662 " =24 "
3.55	Moving ship's engines as required to ease out cable from after tank. Checking cable as necessary with brakes.
3.57	Put brakes down and held cable. Ship's engines "full speed" astern. Dynamometer=50 cwt.
3.59	All clear in tanks. Set on "easy ahead," and lifted brakes a little.
4.0	Ship's engines increased to 25 revs. per min. Gentle WSW breeze. Overcast, with rain at times. Slight confused swell. Bar. 30.070 (78° F.). Temp. 78°·3 F. dry, 75° F. wet. Sea surface 80°·2 F.
4.2	SPLICE between Light Deep Sea, No. 2147, Sec. "11A," from after tank, and Light Deep Sea, No. 2147, Sec. "7A," in main tank, passed off drum. After tank now empty. Light Deep Sea, No. 2147, Sec. "11A," paid out by Drum measurement .. =232.038 N.M. Light Deep Sea, No. 2147, Sec. "11A," paid out by Factory measurement .. =232.200 "  Difference .. .. = — 0.162 N.M. TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM FERNANDO NORONHA HUT=887.364 N.M. Patent log =828.1 N.M. Depth=2300 fms. Position { Lat. 6° 28'·6 N. of splice { Long. 23° 54'·5 W.
4.5	Increased ship's engines to 28 revs. per min.
4.15	" " " 33 " "

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour. P.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
	MONDAY, SEPTEMBER 5TH, 1892— <i>contd.</i>
4.25	Weight on brake levers increased to 1861 lbs.
4.37	" " " 1929 "
	" " " 2060 "
4 43	Drum=37 revs. per min.=6.55 kts. Ship's engines=33 revs. per minute.
4.46	Weight on brake levers increased to 2126 lbs.
4.50	" " " 2193 "
4.55	" " " 2258 "
5.0	" " " 2453 "
	5.909 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=832.5 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=893.273 N.M.
	Depth=2300 fms.
	Drum=34 revs. per min.=6.02 kts. Ship's engines=31 revs. per min. Weight on brake levers=2453 lbs. Dynamometer=18 cwt. Strophometer=30 to 34 revs.
	During this afternoon filled after ballast tank with water 310 tons weight.
5.9	Weight on brake levers increased to 2715 lbs.
5.22	" " " " 2848 "
5.25	Increased ship's engines to 35 revs. per min.
5.30	9.057 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=834.9 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=896.421 N.M.
	Depth=2300 fms.
	Drum=38 revs. per min.=6.73 kts. Ship's engines=35 revs. per min. Weight on brake levers=2848 lbs. Dynamometer=20 cwt. Strophometer=32 to 35 revs.
5.35	Weight on brake levers increased to 2963 lbs.
	Increased ship's engines to 38 revs. per min.
5.42	" " " 40 " "
6.0	12.586 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=837.9 N.M.



*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.

Paying out Light Deep Sea from Fernando—*contd.*

P.M.

MONDAY, SEPTEMBER 5TH, 1892—*contd.*

TOTAL CABLE LAID FROM F. NORONHA HUT=899·950 N.M.  
Depth=2300 fms.

Drum=40½ revs. per min.=7·2 KTS. Ship's engines=40  
revs. per min. Weight on brake levers=2963 lbs. Dynamo-  
meter=29 cwt. Strophometer=35 to 40 revs.

6.1 Weight on brake levers increased to 3045 lbs.

6.2 " " " 3112 "

6.10 " " " 3196 "

6.13 " " " 3268 "

6.30 16·150 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid  
out from main tank. Patent log=841·5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=903·514 N.M.  
Depth=2300 fms.

Drum=39 revs. per min.=6·9 KTS. Ship's engines=41  
revs. per min. Weight on brake levers=3268 lbs. Dynamo-  
meter=29 cwt. Strophometer=34 to 38 revs.

Position by { Lat. 6° 37'·3 N.  
observations { Long. 23° 46'·9 W.

Average current observed since noon=S 22° E, 5·7 N.M.=  
0·8 KT.

CHANGED COURSE TO N 34° E.

CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST  
COURSE, N 35° E=518·102 N.M.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE,  
N 35° E=473·030 N.M.

SLACK 9·52‰. (For Courses made good see Position  
Sheet.)

6.58 Weight on brake levers increased to 3341 lbs.

7.0 19·722 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid  
out from main tank. Patent log=844·5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=907·086 N.M.  
Depth=2300 fms.

Drum=40 revs. per min.=7·08 KTS. Ship's engines=40  
revs. per min. Weight on brake levers=3341 lbs. Dynamo-  
meter=29 cwt. Strophometer=37 to 40 revs.

7.5 Weight on brake levers increased to 3460 lbs.

7.30 23·219 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid  
out from main tank. Patent log=847·8 N.M.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.  
P.M.

**Paying out Light Deep Sea from Fernando—*contd.***

MONDAY, SEPTEMBER 5TH, 1892—*contd.*

TOTAL CABLE LAID FROM F. NORONHA HUT=910·583 N.M.  
Depth=2300 fms.

Drum=39½ revs. per min.=7·0 KTS. Ship's engines=40  
revs. per min. Weight on brake levers=3460 lbs. Dynamo-  
meter=29 cwt. Strophometer=34 to 38 revs.

7.33 Weight on brake levers increased to 3554 lbs.

7.45 Gradually increasing ship's engines to about 45 revs. per  
min.

7.46 Weight on brake levers decreased to 3376 lbs.

7.48 " " " 3230 "

8.0 Light N'y airs. Fine, but cloudy. Slight confused swell.  
Bar. 30·105 (78° F.). Temp. 77°·8 F. dry, 75°·3 F. wet.  
Sea surface 80° F.

26·718 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid  
out from main tank. Patent log=851·3 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=914·082 N.M.  
Depth=2250 fms

Drum=41 revs. per min.=7·2 KTS. Ship's engines=45  
revs. per min. Weight on brake levers=3230 lbs. Dynamo-  
meter=25 cwt. Strophometer=35 to 38 revs.

Pumping water out of main cable tank from time to time  
as required.

8.30 30·352 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid  
out from main tank. Patent log=855·2 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=917·716 N.M.  
Depth=2250 fms.

Drum=42 revs. per min.=7·43 KTS. Ship's engines=45  
revs. per min. Weight on brake levers=3230 lbs. Dynamo-  
meter=22 cwt. Strophometer=38 to 40 revs.

9.0 34·099 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid  
out from main tank. Patent log=858·9 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=921·463 N.M.  
Depth=2220 fms.

Drum=44 revs. per min.=7·79 KTS. Ship's engines=46  
revs. per min. Weight on brake levers=3230 lbs. Dynamo-  
meter=22 cwt. Strophometer=40 to 41 revs.

9.8 Weight on brake levers increased to 3515 lbs.

S.S. "SILVERTOWN."

<p>Hour. P.M.</p>	<p>Paying out Light Deep Sea from Fernando—<i>contd.</i></p>
<p>MONDAY, SEPTEMBER 5TH, 1892—<i>contd.</i></p>	
<p>9.30</p>	<p>38·070 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=862·8 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=925·434 N.M.  Depth=2000 fms.  Drum=45 revs. per min.=7·96 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3515 lbs. Dynamometer=24 cwt. Strophometer=40 to 43 revs.</p>
<p>9.46</p>	<p>Weight on brake levers decreased to 3421 lbs.</p>
<p>10.0</p>	<p>42·191 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=866·8 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=929·555 N.M.  Depth=2000 fms.  Drum=47 revs. per min.=8·32 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3421 lbs. Dynamometer=24 cwt. Strophometer=40 to 44 revs.</p>
<p>10.30</p>	<p>46·363 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=870·6 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=933·727 N.M.  Depth=2000 fms.  Drum=48 revs. per min.=8·5 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3421 lbs. Dynamometer=24 cwt. Strophometer=42 to 45 revs.</p>
<p>10.35</p>	<p>Weight on brake levers decreased to 3302 lbs.</p>
<p>11.0</p>	<p>50·544 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=874·5 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=937·908 N.M.  Depth=2000 fms.  Drum=47 revs. per min.=8·32 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3302 lbs. Dynamometer=25 cwt. Strophometer=40 to 44 revs.</p>
<p>11.30</p>	<p>54·689 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=878·4 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=942·053 N.M.  Depth=2000 fms.  Drum=47½ revs. per min.=8·4 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3302 lbs. Dynamometer=24 cwt. Strophometer=40 to 45 revs.</p>



*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.  
P.M.

**Paying out Light Deep Sea from Fernando—*contd.***

MONDAY, SEPTEMBER 5TH, 1892—*contd.*

MIDNT.

Light N by E breeze. Fine and clear. Moderate N'y swell.

Bar. 30.115 (77° F.). Temp. 77°·5 F. dry, 75° wet. Sea surface 79°·8 F.

58.719 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=882.3 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=946.083 N.M.  
Depth=2000 fms.

Drum=46 revs. per min.=8.14 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3302 lbs. Dynamometer=24 cwt. Strophometer=39 to 43 revs.

TUESDAY, SEPTEMBER 6TH, 1892.

A.M.  
0.30

62.546 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=886.1 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=949.910 N.M.  
Depth=2000 fms.

Drum=43 revs. per min.=7.6 KTS. Ship's engines=44 revs. per min. Weight on brake levers=3302 lbs. Dynamometer=25 cwt. Strophometer=41 to 43 revs.

1.0

66.649 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=890.1 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=954.013 N.M.  
Depth=2000 fms.

Drum=46½ revs. per min.=8.2 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3302 lbs. Dynamometer=25 cwt. Strophometer=42 to 46 revs.

1.30

70.847 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=894.0 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=958.211 N.M.  
Depth=2000 fms.

Drum=47½ revs. per min.=8.38 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3302 lbs. Dynamometer=25 cwt. Strophometer=42 to 45 revs.

1.40

Weight on brake levers increased to 3386 lbs.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
A M.	TUESDAY, SEPTEMBER 6TH, 1892— <i>contd.</i>
2.0	75·125 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=898·0 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=962·489 N.M. Depth=2100 fms. Drum=48 revs. per min.=8·49 kts. Ship's engines=47 revs. per min. Weight on brake levers=3386 lbs. Dynamometer=25 cwt. Strophometer=40 to 44 revs.
2.30	79·480 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=902·2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=966·844 N.M. Depth=2200 fms. Drum=49 revs. per min.=8·6 kts. Ship's engines=47 revs. per min. Weight on brake levers=3386 lbs. Dynamometer=25 cwt. Strophometer=40 to 45 revs. Weight on brake levers increased to 3469 lbs.
2.37	" " " 3543 "
3.0	83·808 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=906·0 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=971·172 N.M. Depth=2300 fms. Drum=49 revs. per min.=8·6 kts. Ship's engines=46 revs. per min. Weight on brake levers=3543 lbs. Dynamometer=25 cwt. Strophometer=40 to 45 revs.
3.15	Weight on brake levers increased to 3598 lbs.
3.30	88·124 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=909·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=975·488 N.M. Depth=2350 fms. Drum=48½ revs. per min.=8·5 kts. Ship's engines=47½ revs. per min. Weight on brake levers=3598 lbs. Dynamometer=25 cwt. Strophometer=42 to 45 revs.
4.0	Light WSW airs. Fine and clear. Confused swell. Bar. 30·060 (79° F.). Temp. 77°·7 F. dry, 75°·3 F. wet. Sea surface 80°·2 F. 92·467 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=913·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=979·831 N.M. Depth=2400 fms. Drum=49 revs. per min.=8·6 kts. Ship engines=46½ revs. per min. Weight on brake levers=3598 lbs. Dynamometer=25 cwt. Strophometer=40 to 44 revs.

S.S. "SILVERTOWN."

HOUR. A.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
TUESDAY, SEPTEMBER 6TH, 1892— <i>contd.</i>	
4.30	<p>96·774 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=917·7 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=984·138 N.M.  Depth=2400 fms.  Drum=48½ revs. per min.=8·5 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3598 lbs. Dynamometer=25 cwt. Strophometer=42 to 45 revs.</p>
5.0	<p>101·020 N.M. of Light Deep Sea, No. 2417, Sec. "7A," paid out from main tank. Patent log=921·7 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=988·384 N.M.  Depth=2450 fms.  Drum=48 revs. per min.=8·5 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3598 lbs. Dynamometer=24 cwt. Strophometer=40 to 45 revs.</p>
5.30	<p>105·248 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=925·6 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=992·612 N.M.  Depth=2450 fms.  Drum=47½ revs. per min.=8·4 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3598 lbs. Dynamometer=25 cwt. Strophometer=41 to 45 revs.</p>
6.0	<p>109·514 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=929·4 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=996·878 N.M.  Depth=2450 fms.  Drum=48 revs. per min.=8·5 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3598 lbs. Dynamometer=25 cwt. Strophometer=42 to 47 revs.</p>
6.30	<p>113·868 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=933·4 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1001·232 N.M.  Depth=2450 to 2500 fms.  Drum=49 revs. per min.=8·6 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3598 lbs. Dynamometer 25 cwt. Strophometer=40 to 45 revs.</p>
7·0	<p>118·255 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=937·2 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1005·619 N.M.  Depth=2500 fms.</p>

S.S. "SILVERTOWN."

Hour.

A.M.

Paying out Light Deep Sea from Fernando—*contd.*

TUESDAY, SEPTEMBER 6TH, 1892—*contd.*

Drum=49½ revs. per min.=8·7 kts. Ship's engines=46½ revs. per min. Weight on brake levers=3598 lbs. Dynamometer=25 cwt. Strophometer=42 to 47 revs.

7.30

122·684 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=941·2 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1010·048 N.M.

Depth=2500 fms.

Drum=50 revs. per min.=8·8 kts. Ship's engines=47 revs. per min. Weight on brake levers=3598 lbs. Dynamometer=25 cwt. Strophometer=44 to 47 revs.

8.0

Fine and clear. Calm. Slight SE swell.

Bar. 30·100 (79° F.). Temp. 78°·5 F. dry, 76°·5 F. wet. Sea surface 80°·6 F.

127·083 N.M. of Light Deep Sea, No. 2147, Sec. "7A" paid out from main tank. Patent log=945·1 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1014·447 N.M.

Depth=2500 fms.

Drum=50 revs. per min.=8·85 kts. Ship's engines=47 revs. per min. Weight on brake levers=3598 lbs. Dynamometer=25 cwt. Strophometer=42 to 47 revs.

Crew commenced shifting coal from fore hold to bunkers.

8.30

131·414 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=948·9 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1018·778 N.M.

Depth=2550 fms.

Drum=50 revs. per min.=8·85 kts. Ship's engines=47 revs. per min. Weight on brake levers=3598 lbs. Dynamometer=24 cwt. Strophometer=42 to 46 revs.

8.52

134·594 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=951·7 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1021·958 N.M.

Depth=2600 fms.

Position by { Lat. 8° 7'·2 N.

observations { Long. 22° 47'·1 W.

Average current observed since 6.30 p.m. yesterday= S 55° E, 5·5 N.M.=0·4 kt.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.  
A.M.

Paying out Light Deep Sea from Fernando—*contd.*

TUESDAY, SEPTEMBER 6TH, 1892—*contd.*

- 9.0      135·742 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=952·7 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1023·106 N.M.  
Depth=2600 fms.  
Drum=49½ revs. per min.=8·75 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3598 lbs. Dynamometer=26 cwt. Strophometer=41 to 46 revs.
- 9.30      140·111 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=956·6 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1027·475 N.M.  
Depth=2600 fms.  
Drum=49½ revs. per min.=8·75 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3598 lbs. Dynamometer=26 cwt. Strophometer=40 to 46 revs.
- 10.0      144·557 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=960·6 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1031·921 N.M.  
Depth=2600 fms.  
Drum=49½ revs. per min.=8·75 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3598 lbs. Dynamometer=25 cwt. Strophometer=41 to 47 revs.
- 10.30      148·997 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=964·4 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1036·361 N.M.  
Depth=2600 fms.  
Drum=50 revs. per min.=8·85 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3598 lbs. Dynamometer=25 cwt. Strophometer=43 to 46 revs.
- 11.0      153·470 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=968·3 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1040·834 N.M.  
Depth=2550 fms.  
Drum=50 revs. per min.=8·85 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3598 lbs. Dynamometer=24 cwt. Strophometer=44 to 47 revs.
- 11.24      Weight on brake levers decreased to 3541 lbs.
- 11.30      158·007 N.M. of Light Deep Sea, No. 2147, Sec. "7A," paid out from main tank. Patent log=972·2 N.M.



*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

HOOR.  
A.M.

Paying out Light Deep Sea from Fernando—*contd.*

TUESDAY, SEPTEMBER 6TH, 1892—*contd.*

TOTAL CABLE LAID FROM F. NORONHA HUT=1045·371 N.M.  
Depth=2500 fms.

Drum=51 revs. per min.=9·03 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3541 lbs. Dyna-  
nometer=25 cwt. Strophometer=45 to 48 revs.

11.44 SPLICE in Light Deep Sea, No. 2147, between Secs. "7A"  
and "5A," from main tank, passed off drum.  
Light Deep Sea, No. 2147, Sec. "7A," paid  
out by Drum measurement .. .. =160·143 N.M.  
Light Deep Sea, No. 2147, Sec. "7A," paid  
out by Factory measurement .. .. =160·294 ,,  
Difference .. .. = — 0·151 N.M.

TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM  
FERNANDO NORONHA HUT=1047·658 N.M.

Patent log=974·0 N.M.

Depth=2450 fms.

Position { Lat. 8° 26'·7 N.  
of splice { Long. 22° 32'·3 W.

11.50 (Observed noon.) 0·370 N.M. of Light Deep Sea, No. 2147  
Sec. "5A," paid out from main tank. Patent log=974·8 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1048·528 N.M.  
Depth=2450 fms.

CABLE, BY INDICATOR, CORRECTED, PAID OUT SINCE  
APPARENT NOON YESTERDAY=187·229 N.M.

DISTANCE, BY CHART, OVERGROUND, SINCE APPARENT  
NOON YESTERDAY=166·890 N.M.

SLACK=12·19'/.c.

Position { Lat. 8° 27'·4 N.  
{ Long. 22° 32'·0 W.

Current observed since 8.52 a.m.=N 76° E, 3·4 N.M.=1·1 KT.

NOON. Light S'y breeze. Fine and bright, but cloudy. Slight  
swell.

Bar. 30·134 (83° F.). Temp. 80°·3 F. dry, 77° F. wet.  
Sea surface 81°·8 F.

2·375 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid  
out from main tank. Patent log=975·9 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1050·033 N.M.  
Depth=2450 fms.

S.S. "SILVERTOWN."

Hour.  
P.M.

Paying out Light Deep Sea from Fernando—*contd.*

TUESDAY, SEPTEMBER 6TH, 1892—*contd.*

Drum=51 revs. per min.=9.03 kts. Ship's engines=47 revs. per min. Weight on brake levers=3541 lbs. Dynamometer=28 cwt. Strophometer=45 to 50 revs.

0.30 6.959 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=980.0 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1054.617 N.M.  
Depth=2450 fms.

Drum=52 revs. per min.=9.2 kts. Ship's engines=47 revs. per min. Weight on brake levers=3541 lbs. Dynamometer=28 cwt. Strophometer=45 to 50 revs.

1.0 11.524 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=983.8 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1059.182 N.M.  
Depth=2450 fms.

Drum=51 revs. per min.=9.03 kts. Ship's engines=47 revs. per min. Weight on brake levers=3541 lbs. Dynamometer=28 cwt. Strophometer=45 to 49 revs.

1.30 16.117 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=987.6 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1063.775 N.M.  
Depth=2450 fms.

Drum=52 revs. per min.=9.2 kts. Ship's engines=47 revs. per min. Weight on brake levers=3541 lbs. Dynamometer=28 cwt. Strophometer=48 to 53 revs.

2.0 20.519 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=991.4 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1068.177 N.M.  
Depth=2450 fms.

Drum=50 revs. per min.=8.8 kts. Ship's engines=47 revs. per min. Weight on brake levers=3541 lbs. Dynamometer=28 cwt. Strophometer=49 to 53 revs.

2.30 24.968 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=995.3 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1072.626 N.M.  
Depth=2450 fms.

Drum=50 revs. per min.=8.8 kts. Ship's engines=47 revs. per min. Weight on brake levers=3541 lbs. Dynamometer=28 cwt. Strophometer=48 revs.



S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	TUESDAY, SEPTEMBER 6TH, 1892— <i>contd.</i>
3.0	29·553 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=999·2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1077·211 N.M. Depth=2450 fms. Drum=52 revs. per min.=9·2 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3541 lbs. Dynamometer=28 cwt. Strophometer=48 to 50 revs.
3.30	34·055 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1003·2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1081·713 N.M. Depth=2450 fms. Drum=51 revs. per min.=9·02 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3541 lbs. Dynamometer=28 cwt. Strophometer=44 to 49 revs.
4.0	Light SW by S breeze. Fine and clear weather. Slight N'y sea and swell. Bar. 30·070 (83° F.). Temp. 81° F. dry, 77·1 F. wet. Sea surface 82° F. 38·492 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1007·1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1086·150 N.M. Depth=2450 fms. Drum=50 revs. per min.=8·8 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3541 lbs. Dynamometer=28 cwt. Strophometer=42 to 49 revs.
4.20	Spoke Fernando Hut, and received the following telegram in code :—"From Rio Janeiro, 6th, for Benest. Thanks for telegram. Telegraph to Jeffery from Senegal Bechervaise go to Palmas. Robert."
4.30	42·864 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1011·0 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1090·522 N.M. Depth=2450 fms. Drum=49½ revs. per min.=8·7 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3541 lbs. Dynamometer=28 cwt. Strophometer=42 to 48 revs.
5.0	47·243 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1014·9 N.M.

S.S. "SILVERTOWN."

Hour.  
P.M.

Paying out Light Deep Sea from Fernando—*contd.*

TUESDAY, SEPTEMBER 6TH, 1892—*contd.*

TOTAL CABLE LAID FROM F. NORONHA HUT=1094·901 N.M.  
Depth=2450 fms.

Drum=49½ revs. per min.=8·7 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3541 lbs. Dyna-  
mometer=28 cwt. Strophometer=42 to 47 revs.

5.30

51·526 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid  
out from main tank. Patent log=1018·8 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1099·184 N.M.  
Depth=2450 fms.

Drum=48½ revs. per min.=8·5 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3541 lbs. Dyna-  
mometer=28 cwt. Strophometer=41 to 47 revs.

Crew ceased work for the day; 42 tons of coal transferred  
from fore hold to bunkers during the day.

6.0

55·952 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid  
out from main tank. Patent log=1021·9 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1103·610 N.M.  
Depth=2450 fms.

Drum=50 revs. per min.=8·8 KTS. Ship's engines=46  
revs. per min. Weight on brake levers=3541 lbs. Dynamo-  
meter=28 cwt. Strophometer=42 to 46 revs.

6.30

60·522 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid  
out from main tank. Patent log=1025·7 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1108·180 N.M.  
Depth=2450 fms.

Drum=51½ revs. per min.=9·1 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3541 lbs. Dynamo-  
meter=28 cwt. Strophometer=44 to 50 revs.

Position by { Lat. 9° 12'·9 N.  
observations { Long. 22° 1'·0 W.

Current observed since noon=N 61° E, 5·6 N.M.=0·8 KT.

7.0

65·118 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid  
out from main tank. Patent log=1029·7 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1112·776 N.M.  
Depth=2450 fms.

Drum=52 revs. per min.=9·2 KTS. Ship's engines=46½  
revs. per min. Weight on brake levers=3541 lbs. Dynamo-  
meter=28 cwt. Strophometer=44 to 47 revs.

7.5

Weight on brake levers increased to 3578 lbs.

S.S. "SILVERTOWN."

Hour.  
P.M.

Paying out Light Deep Sea from Fernando—*contd.*

TUESDAY, SEPTEMBER 6TH, 1892—*contd.*

- 7.30 69·676 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1033·6 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1117·334 N.M.  
Depth=2500 fms.  
Drum=51½ revs. per min.=9·1 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3578 lbs. Dynamo-meter=26 cwt. Strophometer=44 to 48 revs.
- 8.0 Calm. Fine, bright and clear. Close sultry weather. Slight N'y swell.  
Bar. 30·100 (78° F.). Temp. 77°·8 F. dry, 77° F. wet. Sea surface 81° F.  
74·287 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1037·4 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1121·945 N.M.  
Depth=2510 fms.  
Drum=51 revs. per min.=9·03 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3578 lbs. Dynamo-meter=26 cwt. Strophometer=43 to 48 revs.
- 8.30 78·772 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1041·2 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1126·430 N.M.  
Depth=2520 fms.  
Drum=51 revs. per min.=9·03 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3578 lbs. Dynamo-meter=24 cwt. Strophometer=44 to 48 revs.
- 9.0 83·345 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1045·2 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1131·003 N.M.  
Depth=2530 fms.  
Drum=51½ revs. per min.=9·11 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3578 lbs. Dynamo-meter=25 cwt. Strophometer=45 to 49 revs.
- 9.30 87·826 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1049·2 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1135·484 N.M.  
Depth=2550 fms.  
Drum=51 revs. per min.=9·03 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3578 lbs. Dynamo-meter=25 cwt. Strophometer=44 to 48 revs.

S.S. "SILVERTOWN."

Hour. P.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
TUESDAY, SEPTEMBER 6TH, 1892— <i>contd.</i>	
10.0	<p>92·181 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1053·2 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1139·839 N.M.  Depth=2650 fms.  Drum=49½ revs. per min.=8·75 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3578 lbs. Dynamometer=25 cwt. Strophometer=44 to 47 revs.</p>
10.30	<p>96·556 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1057·2 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1144·214 N.M.  Depth=2670 fms.  Drum=49½ revs. per min.=8·75 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3578 lbs. Dynamometer=25 cwt. Strophometer=40 to 46 revs.</p>
11.0	<p>100·917 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1061·1 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1148·575 N.M.  Depth=2670 fms.  Drum=49½ revs. per min.=8·75 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3578 lbs. Dynamometer=24 cwt. Strophometer=43 to 47 revs.</p>
11.10	Unscrewed brakes a little.
11.30	<p>105·142 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1065·1 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1152·800 N.M.  Depth=2700 fms.  Drum=48 revs. per min.=8·5 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3578 lbs. Dynamometer=24½ cwt. Strophometer=43 to 47 revs.</p>
MIDNT	<p>Light SW breeze. Fine, but cloudy. Slight N'ly swell.  Bar. 30·100 (81° F.). Temp. 79°·8 F. dry, 76°·7 F. wet.  Sea surface 80°·5 F.  109·360 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid out from main tank. Patent log=1069·2 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1157·018 N.M.  Depth=2750 fms.  Drum=48 revs. per min.=8·5 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3578 lbs. Dynamometer=25 cwt. Strophometer=40 to 45 revs.</p>

S.S. "SILVERTOWN."

Hour.  
A.M.

**Paying out Light Deep Sea from Fernando—*contd.***

WEDNESDAY, SEPTEMBER 7TH, 1892.

- 0.30      113·482 N.M. of Light Deep Sea, No. 2147, Sec. "5A,"  
paid out from main tank. Patent log=1073·1 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1161·140 N.M.  
Depth=2750 fms.  
Drum=46½ revs. per min.=8·2 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3578 lbs. Dyna-  
mometer=25 cwt. Srophometer=42 to 45 revs.
- 1.0      117·621 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid  
out from main tank. Patent log=1077·1 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1165·279 N.M.  
Depth=2800 fms.  
Drum=47 revs. per min.=8·3 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3578 lbs. Dyna-  
mometer=27 cwt. Srophometer=40 to 44 revs.
- 1.30      121·801 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid  
out from main tank. Patent log=1080·9 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1169·459 N.M.  
Depth=2800 fms.  
Drum=47 revs. per min.=8·3 KTS. Ship's engines=46  
revs. per min. Weight on brake levers=3578 lbs. Dyna-  
mometer=27 cwt. Srophometer=40 to 45 revs.
- 2.0      126·065 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid  
out from main tank. Patent log=1084·9 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1173·723 N.M.  
Depth=2750 fms.  
Drum=48 revs. per min.=8·5 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3578 lbs. Dyna-  
mometer=27 cwt. Srophometer=41 to 46 revs.
- 2.30      130·443 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid  
out from main tank. Patent log=1089·0 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1178·101 N.M.  
Depth=2750 fms.  
Drum=49½ revs. per min.=8·74 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3578 lbs. Dyna-  
mometer=26 cwt. Srophometer=43 to 47 revs.
- 3.0      134·744 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid  
out from main tank. Patent log=1093·0 N.M.



*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.  
A.M.

**Paying out Light Deep Sea from Fernando—*contd.***

WEDNESDAY, SEPTEMBER 7TH, 1892—*contd.*

TOTAL CABLE LAID FROM F. NORONHA HUT=1182·402 N.M.  
Depth=2750 fms.

Drum=48½ revs. per min.=8·6 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3578 lbs. Dyna-  
mometer=26 cwt. Strophometer=44 revs.

3.30 139·149 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid  
out from main tank. Patent log=1097·1 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1186·807 N.M.  
Depth=2750 fms.

Drum=49½ revs. per min.=8·8 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3578 lbs. Dyna-  
mometer=25 cwt. Strophometer=45 to 47 revs.

4.0 Moderate W'y breeze. Fine and clear. Light N'y swell.  
Bar. 30·050 (79° F.). Temp. 78·1 F. dry, 75° F. wet. Sea  
surface 80°·8 F.

143·545 N.M. of Light Deep Sea, No. 2147, Sec. "5A," paid  
out from main tank. Patent log=1101·0 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1191·203 N.M.  
Depth=2750 fms.

Drum=48½ revs. per min.=8·58 KTS. Ship's engines=46  
revs. per min. Weight on brake levers=3578 lbs. Dyna-  
mometer=25 cwt. Strophometer=42 to 46 revs.

4.4 SPLICE in Light Deep Sea, No. 2147, between Secs. "5A"  
and "11B," from main tank, passed off drum.

Light Deep Sea, No. 2147, Sec. "5A," paid  
out by Drum measurement .. .. =144·123 N.M.

Light Deep Sea, No. 2147, Sec. "5A," paid  
out by Factory measurement .. .. =144·115 "

Difference .. .. =+0·008 N.M.

TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM FER-  
NANDO NORONHA HUT=1191·773 N.M.

Patent log=1101·4 N.M.

Depth=2750 fms.

Position { Lat. 10° 16'·7 N.

of splice { Long. 21° 18'·7 W.

4.30 3·688 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid  
out from main tank. Patent log=1105·0 N.M.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.  
A.M.

**Paying out Light Deep Sea from Fernando—*contd.***

WEDNESDAY, SEPTEMBER 7TH, 1892—*contd.*

TOTAL CABLE LAID FROM F. NORONHA HUT=1195·461 N.M.  
Depth=2750 fms.

Drum=50 revs. per min.=8·8 KTS. Ship's engines=46  
revs. per min. Weight on brake levers=3578 lbs. Dynamo-  
meter=25 cwt. Strophometer=42 to 46 revs.

5.0      8·116 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid  
out from main tank. Patent log=1108·8 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1199·889 N.M.  
Depth=2750 fms.

Drum=52 revs. per min.=9·20 KTS. Ship's engines=46  
revs. per min. Weight on brake levers=3578 lbs. Dynamo-  
meter=25 cwt. Strophometer=44 to 48 revs.

5.30      12·633 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid  
out from main tank. Patent log=1112·8 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1204·406 N.M.  
Depth=2750 fms.

Drum=51 revs. per min.=9·0 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3578 lbs. Dynamo-  
meter=25 cwt. Strophometer=44 to 47 revs.

Position by { Lat. 10° 26'·1 N.  
observations { Long. 21° 12'·7 W.

Current observed since 6.30 p.m. yesterday=E, 3·3 N.M.  
=0·3 KT.

6.0      17·046 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid  
out from main tank. Patent log=1116·8 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1208·819 N.M.  
Depth=2750 fms.

Drum=49 $\frac{3}{4}$  revs. per min.=8·7 KTS. Ship's engines=46  
revs. per min. Weight on brake levers=3578 lbs. Dynamo-  
meter=23 cwt. Strophometer=42 to 46 revs.

Crew resumed shifting coal from fore hold to bunkers.

6.30      21·310 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid  
out from main tank. Patent log=1120·8 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1213·083 N.M.  
Depth=2750 fms.

Drum=48 revs. per min.=8·5 KTS. Ship's engines=46 $\frac{1}{2}$   
revs. per min. Weight on brake levers=3578 lbs. Dynamo-  
meter=27 cwt. Strophometer=42 to 46 revs.

7.0      25·529 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid  
out from main tank. Patent log=1124·8 N.M.



*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.  
A.M.

**Paying out Light Deep Sea from Fernando—*contd.***

WEDNESDAY, SEPTEMBER 7TH, 1892—*contd.*

TOTAL CABLE LAID FROM F. NORONHA HUT=1217·302 N.M.  
Depth=2750 fms.

Drum=47½ revs. per min.=8·4 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3578 lbs. Dynamo-  
meter=27 cwt. Strophometer=42 to 46 revs.

7.30 29·656 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid  
out from main tank. Patent log=1128·8 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1221·429 N.M.  
Depth=2750 fms.

Drum=47 revs. per min.=8·3 KTS. Ship's engines=46½  
revs. per min. Weight on brake levers=3578 lbs. Dynamo-  
meter=27 cwt. Strophometer=40 to 44 revs.

8.0 Light NNW breeze. Fine clear weather. Smooth sea,  
with slight N'y swell.

Bar. 30·120 (80° F.). Temp. 83° F. dry, 78°·3 F. wet. Sea  
surface 81°·3 F.

33·860 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid  
out from main tank. Patent log=1132·5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1225·633 N.M.  
Depth=2750 fms.

Drum=47½ revs. per min.=8·4 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3578 lbs. Dynamo-  
meter=27 cwt. Strophometer=42 to 44 revs.

8.30 38·011 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid  
out from main tank. Patent log=1136·4 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1229·784 N.M.  
Depth=2750 fms.

Drum=47½ revs. per min.=8·4 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3578 lbs. Dynamo-  
meter=25 cwt. Strophometer=43 to 44 revs.

9.0 42·121 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid  
out from main tank. Patent log=1140·7 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1233·894 N.M.  
Depth=2750 fms.

Drum=46 revs. per min.=8·14 KTS. Ship's engines=47  
revs. per min. Weight on brake levers=3578 lbs. Dynamo-  
meter=25 cwt. Strophometer=42 to 44 revs.

9.30 46·204 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid  
out from main tank. Patent log.=1144·8 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1237·977 N.M.

S.S. "SILVERTOWN."

Hour.  
A.M.

Paying out Light Deep Sea from Fernando—*contd.*

WEDNESDAY, SEPTEMBER 7TH, 1892—*contd.*

Depth=2750 fms.

Drum=47 revs. per min.=8.32 kts. Ship's engines=47 revs. per min. Weight on brake levers=3578 lbs. Dynamometer=25 cwt. Strophometer=40 to 43 revs.

10.0 50.279 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1148.9 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1242.052 N.M.

Depth=2750 fms.

Drum=47 revs. per min.=8.32 kts. Ship's engines=47 revs. per min. Weight on brake levers=3578 lbs. Dynamometer=25 cwt. Strophometer=40 to 43 revs.

10.30 54.252 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1152.9 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1246.025 N.M.

Depth=2745 fms.

Drum=47½ revs. per min.=8.4 kts. Ship's engines=47½ revs. per min. Weight on brake levers=3578 lbs. Dynamometer=25 cwt. Strophometer=42 to 46 revs.

11.0 58.483 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1156.9 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1250.256 N.M.

Depth=2740 fms.

Drum=48 revs. per min.=8.5 kts. Ship's engines=47 revs. per min. Weight on brake levers=3578 lbs. Dynamometer=25 cwt. Strophometer=42 to 45 revs.

11.30 62.790 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1161.0 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1254.563 N.M.

Depth=2735 fms.

Drum=48½ revs. per min.=8.58 kts. Ship's engines=47½ revs. per min. Weight on brake levers=3578 lbs. Dynamometer=25 cwt. Strophometer=44 to 46 revs.

11.43 (Observed noon.) 64.652 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1162.8 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1256.425 N.M.

Depth=2730 fms.

CABLE, BY INDICATOR, CORRECTED, PAID OUT SINCE OBSERVED NOON YESTERDAY=207.897 N.M.

S.S. "SILVERTOWN."

<p>Hour. P.M.</p>	<p>Paying out Light Deep Sea from Fernando—<i>contd.</i></p>
	<p>WEDNESDAY, SEPTEMBER 7TH, 1892—<i>contd.</i></p>
	<p>DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=1895·10 N.M.</p>
	<p>SLACK=9·7%.</p>
	<p>Position { Lat. 11° 5'·2 N. Long. 20° 45'·5 W.</p>
	<p>Current observed since 5.30 a.m.=S 31° E, 2·6 N.M.=0·7 KT.</p>
<p>NOON.</p>	<p>Light NNW airs. Fine, but cloudy. Hot and sultry. Slight confused swell.</p>
	<p>Bar. 30·085 (82° F.). Temp. 84°·3 F. dry, 78°·5 F. wet. Sea surface 82°·3 F.</p>
	<p>67·012 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1165·0 N.M.</p>
	<p>TOTAL CABLE LAID FROM F. NORONHA HUT=1258·785 N.M. Depth=2730 fms.</p>
	<p>Drum=47½ revs. per min.=8·4 KTS. Ship's engines= 45½ revs. per min. Weight on brake levers=3578 lbs. Dynamometer=25 cwt. Strophometer=42 to 45 revs.</p>
<p>0.20</p>	<p>Spoke Fernando Hut and sent the following telegrams (No 2 in Code):—</p>
	<p>1. "Jeffery, Cadiz. Noon. Seventh September. Latitude eleven degrees five north, longitude twenty degrees forty- seven. Cable laid twelve fifty-seven knots. Advise Silver- gray and Vasquez. Benest."</p>
	<p>2. "Robert Gray. Seventh September. Latitude eleven degrees five north, longitude twenty degrees forty-seven. Cable laid twelve fifty-seven knots. Benest."</p>
<p>0.30</p>	<p>71·190 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1169·1 N.M.</p>
	<p>TOTAL CABLE LAID FROM F. NORONHA HUT=1262·963 N.M. Depth=2730 fms.</p>
	<p>Drum=47 revs. per min.=8·3 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3578 lbs. Dynamo- meter=25 cwt. Strophometer=42 to 44 revs.</p>
<p>1.0</p>	<p>75·347 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1173·1 N.M.</p>
	<p>TOTAL CABLE LAID FROM F. NORONHA HUT=1267·120 N.M. Depth=2700 fms.</p>
	<p>Drum=47 revs. per min.=8·32 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3578 lbs. Dynamo- meter=25 cwt. Strophometer=43 to 45 revs.</p>

S.S. "SILVERTOWN."

HOOR.  
P.M.

**Paying out Light Deep Sea from Fernando—*contd.***

WEDNESDAY, SEPTEMBER 7TH, 1892—*contd.*

- 1.25      Tightened up brakes a little.
- 1.30      79·509 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1177·0 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1271·282 N.M.  
Depth=2700 fms.  
Drum=47 revs. per min.=8·3 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3578 lbs. Dynamometer=25 cwt. Strophometer=39 to 44 revs.
- 2.0        83·670 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1181·1 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1275·443 N.M.  
Depth=2700 fms.  
Drum=47 revs. per min.=8·3 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3578 lbs. Dynamometer=27 cwt. Strophometer=42 to 46 revs.
- 2.30      87·924 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1185·2 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1279·697 N.M.  
Depth=2700 fms.  
Drum=48 revs. per min.=8·49 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3578 lbs. Dynamometer=27 cwt. Strophometer=42 to 46 revs.
- 2.57      Weight on brake levers increased to 3658 lbs.
- 3.0        92·172 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1189·1 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1283·945 N.M.  
Depth=2700 fms.  
Drum=48 revs. per min.=8·49 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3658 lbs. Dynamometer=25 cwt. Strophometer=42 to 46 revs.
- 3.15      Weight on brake levers increased to 3674 lbs.
- 3.30      96·317 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1193·0 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1288·090 N.M.  
Depth=2700 fms.  
Drum=47 revs. per min.=8·3 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3674 lbs. Dynamometer=26 cwt. Strophometer=42 to 46 revs.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.  
P.M.

**Paying out Light Deep Sea from Fernando—*contd.***

WEDNESDAY, SEPTEMBER 7TH, 1892—*contd.*

- 4.0      Light NW'ly airs. Fine, but cloudy. Smooth sea. Slight NNW swell.  
           Bar. 30·030 (81° F.). Temp. 81°·9 F. dry, 78° F. wet. Sea surface 82° F  
           100·403 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1197·1 N.M.  
           TOTAL CABLE LAID FROM F. NORONHA HUT=1292·176 N.M.  
           Depth=2650 fms.  
           Drum=46 revs. per min.=8·1 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3674 lbs. Dynamometer=26 cwt. Strophometer=40 to 44 revs.
- 4.5      Weight on brake levers increased to 3764 lbs.
- 4.30      104·525 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1201·0 N.M.  
           TOTAL CABLE LAID FROM F. NORONHA HUT=1296·298 N.M.  
           Depth=2650 fms.  
           Drum=46½ revs. per min.=8·2 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3764 lbs. Dynamometer=26 cwt. Strophometer=40 to 45 revs.
- 5.0      108·655 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1204·9 N.M.  
           TOTAL CABLE LAID FROM F. NORONHA HUT=1300·428 N.M.  
           Depth=2650 fms.  
           Drum=46½ revs. per min.=8·2 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3764 lbs. Dynamometer=26 cwt. Strophometer=40 to 45 revs.
- 5.30      112·856 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1208·8 N.M.  
           TOTAL CABLE LAID FROM F. NORONHA HUT=1304·629 N.M.  
           Depth=2650 fms.  
           Drum=47 revs. per min.=8·3 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3764 lbs. Dynamometer=26 cwt. Strophometer=40 to 45 revs.  
           Crew stopped transferring coal from fore hold to bunkers; 100 tons in all shifted yesterday and to-day, leaving 380 tons in fore hold.
- 6.0      117·039 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1212·9 N.M.  
           TOTAL CABLE LAID FROM F. NORONHA HUT=1308·812 N.M.  
           Depth=2650 fms.



S.S. "SILVERTOWN."

Hour. P.M	Paying out Light Deep Sea from Fernando— <i>contd.</i>
<p>WEDNESDAY, SEPTEMBER 7TH, 1892—<i>contd.</i></p> <p>Drum=47 revs per min.=8.3 kts. Ship's engines=46 revs. per min. Weight on brake levers=3764 lbs. Dynamo-meter=27 cwt. Strophometer=42 to 46 revs.</p>	
6.30	<p>121.335 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1216.7 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1313.108 N.M.  Depth 2650 fms.</p> <p>Drum 48½ revs. per min.=8.5 kts. Ship's engines=46 revs. per min. Weight on brake levers=3764 lbs. Dynamo-meter=27 cwt. Strophometer=42 to 45 revs.</p>
7.0	<p>125.593 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1220.6 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1317.366 N.M.  Depth=2650 fms.</p> <p>Drum=48 revs. per min.=8.5 kts. Ship's engines=46 revs. per min. Weight on brake levers=3764 lbs. Dynamo-meter=27 cwt. Strophometer=42 to 44 revs.</p>
7.7	<p>Weight on brake levers increased to 3842 lbs.</p>
7.30	<p>129.924 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1224.6 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1321.697 N.M.  Depth=2650 fms.</p> <p>Drum=49 revs. per min.=8.6 kts. Ship's engines=47 revs. per min. Weight on brake levers=3842 lbs. Dynamo-meter=26 cwt. Strophometer=44 to 46 revs.</p>
8.0	<p>Light N by W wind. Fine, but cloudy. Slight NW swell. Bar. 30.072 (82° F.). Temp. 80°·3 F. dry, 77°·4 F. wet. Sea surface 80°·8 F.</p> <p>134.293 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1228.4 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1326.066 N.M.  Depth=2650 fms.</p> <p>Drum=49 revs. per min.=8.67 kts. Ship's engines=46 revs. per min. Weight on brake levers=3842 lbs. Dynamo-meter=25 cwt. Strophometer=43 to 46 revs.</p>
8.30	<p>138.571 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1232.3 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1330.344 N.M.  Depth=2650 fms.</p>

S.S. "SILVERTOWN."

Hour.  
P.M.

Paying out Light Deep Sea from Fernando—*contd.*

WEDNESDAY, SEPTEMBER 7TH, 1892—*contd.*

Drum=48 revs. per min.=8·5 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3842 lbs. Dynamometer=26 cwt. Strophometer=43 to 45 revs.

9.0

142·878 N.M. of Light Deep Sea, No. 2147, Sec. "11B," paid out from main tank. Patent log=1236·3 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1334·651 N.M.  
Depth=2650 fms.

Drum=48 revs. per min.=8·5 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3842 lbs. Dynamometer=27 cwt. Strophometer=43 to 46 revs.

9.7

SPLICE in Light Deep Sea, No. 2147, between Secs. "11B" and "7 pt. B," from main tank, passed off drum.

Light Deep Sea, No. 2147, Sec. "11B," paid out by Drum measurement .. .. = 143·725 N.M.

Light Deep Sea, No. 2147, Sec. "11B," paid out by Factory measurement .. .. = 143·828 ,,

Difference .. .. = - 0·103 N.M.

TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM FERNANDO NORONHA HUT = 1335·601 N.M.

Patent log=1237·2 N.M.

Depth=2650 fms.

Position { Lat. 12° 7'·1 N.  
of splice { Long. 20° 6'·4 W.

9.15

Weight on brake levers decreased to 3670 lbs.

9.30

3·375 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1240·3 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1338·976 N.M.  
Depth=2640 fms.

Drum=48 revs. per min.=8·5 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3670 lbs. Dynamometer=27 cwt. Strophometer=41 to 45 revs.

10.0

7·591 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1244·2 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1343·192 N.M.  
Depth=2630 fms.

Drum=47½ revs. per min.=8·4 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3670 lbs. Dynamometer=26 cwt. Strophometer=41 to 44 revs.



S.S. "SILVERTOWN."

Hour.  
P.M.

Paying out Light Deep Sea from Fernando—*contd.*

WEDNESDAY, SEPTEMBER 7TH, 1892—*contd.*

- 10.30 11·898 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1248·0 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1347·499 N.M.  
Depth=2600 fms.  
Drum=48½ revs. per min.=8·58 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3670 lbs. Dynamo-meter=26 cwt. Strophometer=42 to 46 revs.
- 11.0 16·227 N.M. of Light Deep Sea, No. 2417, Sec. "7 pt. B," paid out from main tank. Patent log=1252·0 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1351·828 N.M.  
Depth=2550 fms.  
Drum=48 revs. per min.=8·5 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3670 lbs. Dynamo-meter=27 cwt. Strophometer=40 to 44 revs.
- 11.13 Weight on brake levers decreased to 3585 lbs.
- 11.30 20·363 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1256·0 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1355·964 N.M.  
Depth=2500 fms.  
Drum=47½ revs. per min.=8·4 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3585 lbs. Dynamo-meter=27 cwt. Strophometer=40 to 45 revs.
- 11.42 Weight on brake levers increased to 3670 lbs.
- MIDNT. Light N by W breeze. Fine, but cloudy. Smooth sea, with slight swell.  
Bar. 30·095 (82° F.). Temp. 80°·4 F. dry, 77°·8 F. wet. Sea surface 80°·8 F.  
24·481 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1259·9 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1360·082 N.M.  
Depth=2500 fms.  
Drum=46½ revs. per min.=8·2 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3670 lbs. Dynamo-meter=27 cwt. Strophometer=40 to 44 revs.

S.S. "SILVERTOWN."

Hour. A.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
	THURSDAY, SEPTEMBER, 8TH, 1892.
0.13	Weight on brake levers increased to 3758 lbs.
0.30	28·680 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1263·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1364·281 N.M. Depth=2500 fms. Drum=47½ revs. per min.=8·36 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3758 lbs. Dynamometer = 27 cwt. Strophometer = 40 to 44 revs.
1.0	32·954 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1267·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1368·555 N.M. Depth=2500 fms. Drum=48 revs. per min.=8·49 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3758 lbs. Dynamometer=27 cwt. Strophometer=40 to 44 revs.
1.30	37·076 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1271·5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1372·677 N.M. Depth=2500 fms. Drum=46½ revs. per min.=8·24 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3758 lbs. Dynamometer = 27 cwt. Strophometer = 39 to 43 revs.
1.50	Weight on brake levers decreased to 3596 lbs.
1.53	Weight on brake levers decreased to 3513 lbs.
2.0	41·074 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1275·4 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1376·675 N.M. Depth=2500 fms. Drum=45 revs. per min.=7·9 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3513 lbs. Dynamometer=27 cwt. Strophometer=39 to 43 revs.
2.30	45·168 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1279·3 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1380·769 N.M. Depth=2450 fms. Drum=46 revs. per min.=8·14 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3513 lbs. Dynamometer=27 cwt. Strophometer=41 to 44 revs. Weight on brake levers increased to 3673 lbs.

S.S. "SILVERTOWN."

HOUR. A.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
3.0	<p>THURSDAY, SEPTEMBER 8TH, 1892—<i>contd.</i></p> <p>49·281 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1283·2 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=1384·882 N.M.</p> <p>Depth=2400 fms.</p> <p>Drum=46½ revs. per min.=8·2 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3673 lbs. Dynamo-meter=27 cwt. Strophometer=40 to 44 revs.</p>
3.5	Weight on brake levers increased to 3751 lbs.
3.30	<p>53·453 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1287·1 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=1389·054 N.M.</p> <p>Depth=2400 fms.</p> <p>Drum=47 revs. per min.=8·3 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3751 lbs. Dynamo-meter=26 cwt. Strophometer=40 to 45 revs.</p> <p>Weight on brake levers increased to 3832 lbs.</p>
4.0	<p>Light N'y wind. Fine, but overcast. Slight sea and swell from NW.</p> <p>Bar. 30·020 (80° F.). Temp. 79°·1 F. dry, 76° F. wet. Sea surface 81°·5.</p> <p>57·616 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1290·9 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=1393·217 N.M.</p> <p>Depth=2400 fms.</p> <p>Drum=47 revs. per min.=8·3 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3832 lbs. Dynamo-meter=26 cwt. Strophometer=40 to 44 revs.</p>
4.30	<p>61·681 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1294·7 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=1397·282 N.M.</p> <p>Depth=2400 fms.</p> <p>Drum=46 revs. per min.=8·1 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3832 lbs. Dynamo-meter=26 cwt. Strophometer=40 to 45 revs.</p>
5.0	<p>65·687 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1298·6 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=1401·288 N.M.</p> <p>Depth=2300 fms.</p> <p>Drum=45 revs. per min.=7·9 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3832 lbs. Dynamo-meter=26 cwt. Strophometer=40 revs.</p>

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando—contd.
A.M.	THURSDAY, SEPTEMBER 8TH, 1892—contd.
5.30	69·768 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1302·4 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1405·369 N.M. Depth=2300 fms. Drum=46 revs. per min.=8·1 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3832 lbs. Dynamo- meter=26 cwt. Strophometer=38 to 44 revs.
5.57	Weight on brake levers decreased to 3673 lbs.
6.0	73·839 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1306·3 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1409·440 N.M. Depth=2300 fms. Drum=46 revs. per min.=8·1 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=3673 lbs. Dynamo- meter=25 cwt. Strophometer=38 to 44 revs.
6.30	77·970 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1310·1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1413·571 N.M. Depth=2250 fms. Drum=46½ revs. per min.=8·2 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3673 lbs. Dynamo- meter=25 cwt. Strophometer=40 to 44 revs.
6.36	Weight on brake levers decreased to 3602 lbs.
6.40	" " " " 3511 "
6.45	" " " " 3221 "
7.0	82·182 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1313·9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1417·783 N.M. Depth=2250 fms. Drum=47 revs. per min.=8·3 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3221 lbs. Dynamo- meter=22 cwt. Strophometer=40 to 46 revs.
7.8	Weight on brake levers decreased to 3112 lbs.
7.30	86·419 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1317·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1422·020 N.M. Depth=2250 fms.

S.S. "SILVERTOWN."

HOUR. A.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
	THURSDAY, SEPTEMBER 8TH, 1892— <i>contd.</i>
	Drum=47½ revs. per min.=8.4 kts. Ship's engines=47 revs. per min. Weight on brake levers=3112 lbs. Dynamometer=21 cwt. Strophometer=42 to 45 revs.
8.0	Light N'y wind. Fine clear weather. Hazy round horizon. Slight NE swell. Bar. 30.080 (81° F.). Temp. 81°·8 F. dry, 78°·3 F. wet. Sea surface 80°·4 F.
	90.638 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1321.6 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=1426.239 N.M. Depth=2240 fms.
	Drum=47½ revs. per min.=8.4 kts. Ship's engines=46½ revs. per min. Weight on brake levers=3112 lbs. Dynamometer=21 cwt. Strophometer=41 to 43 revs.
8.30	94.851 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1325.3 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=1430.452 N.M. Depth=2220 fms.
	Drum=48 revs. per min.=8.5 kts. Ship's engines=47 revs. per min. Weight on brake levers=3112 lbs. Dynamometer=20 cwt. Strophometer=42 to 44 revs.
9.0	99.102 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1329.2 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=1434.703 N.M. Depth=2210 fms.
	Drum=48 revs. per min.=8.5 kts. Ship's engines=47 revs. per min. Weight on brake levers=3112 lbs. Dynamometer=20 cwt. Strophometer=42 to 45 revs.
9.30	103.280 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1333.0 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=1438.881 N.M. Depth=2210 fms.
	Drum=48 revs. per min.=8.5 kts. Ship's engines=47 revs. per min. Weight on brake levers=3112 lbs. Dynamometer=20 cwt. Strophometer=42 to 45 revs.
10.0	107.522 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1336.6 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=1443.123 N.M. Depth=2200 fms.



S.S. "SILVERTOWN."

Hour.  
A.M.

Paying out Light Deep Sea from Fernando—*contd.*

THURSDAY, SEPTEMBER 8TH, 1892—*cont.*

Drum= $49\frac{1}{2}$  revs. per min.=8·76 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3112 lbs. Dynamometer=21 cwt. Strophometer=44 to 47 revs.

NOTE.—Swell from the N'd increasing. Ship pitching at times.

10.30 111·794 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1340·5 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1447·395 N.M.  
Depth=2200 fms.

Drum= $48\frac{1}{2}$  revs. per min.=8·58 KTS. Ship's engines= $46\frac{1}{2}$  revs. per min. Weight on brake levers=3112 lbs. Dynamometer=22 cwt. Strophometer=42 to 45 revs.

11.0 116·093 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1344·3 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1451·694 N.M.  
Depth=2180 fms.

Drum= $49\frac{1}{2}$  revs. per min.=8·76 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3112 lbs. Dynamometer=21 cwt. Strophometer=43 to 47 revs.

11.30 120·436 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1348·0 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1456·037 N.M.  
Depth=2180 fms.

Drum=49 revs. per min.=8·67 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3112 lbs. Dynamometer=21 cwt. Strophometer=42 to 46 revs.

11.35 (Observed noon.) 121·010 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1348·6 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1456·611 N.M.  
Depth=2150 fms.

CABLE, BY INDICATOR, CORRECTED, PAID OUT SINCE OBSERVED NOON YESTERDAY=200·186 N.M.

DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=181·970 N.M.

SLACK=10·0%.

Position { Lat.  $13^{\circ} 39' \cdot 1$  N.  
Long.  $19^{\circ} 6' \cdot 0$  W.

Current observed since noon yesterday=nil.

S.S. "SILVERTOWN."

HOUR.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
	THURSDAY, SEPTEMBER 8TH, 1892— <i>contd.</i>
	CHANGED COURSE TO N 35° E.
	CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, N 34° E=553·097 N.M.
	DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 34° E=504·310 N.M.
	SLACK=9·67%. (For Courses made good see Position Sheet.)
NOON.	Light N'y breeze. Fine, but cloudy and hazy. Smooth sea with moderate N'y swell.
	Bar. 30·100 (82° F.). Temp. 82°·8 F. dry, 76°·8 F. wet. Sea surface 81°·8 F.
	124·684 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1351·7 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=1460·285 N.M. Depth=2150 fms.
	Drum=48 revs. per min.=8·49 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3112 lbs. Dynamometer=21 cwt. Strophometer=42 to 46 revs.
P.M. 0.30	128·933 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1355·5 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=1464·534 N.M. Depth=2100 fms.
	Drum=48 revs. per min.=8·49 KTS. Ship's engines=46 revs. per min. Weight on brake levers=3112 lbs. Dynamometer=21 cwt. Strophometer=42 to 46 revs.
1.0	133·287 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1359·3 N.M.
	TOTAL CABLE LAID FROM F. NORONHA HUT=1461·888 N.M. Depth=2000 fms.
	Drum=49 revs. per min.=8·6 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3112 lbs. Dynamometer 21 cwt. Strophometer=42 to 46 revs.
	Spoke Fernando Hut and sent the following telegrams:—
	1. "Robert Gray, Rio. Noon. Eighth. Latitude thirteen degrees thirty-nine north, longitude nineteen degrees six. Cable laid fourteen hundred and fifty-seven. Hope complete to-morrow. All well. Benest."
	2. "Silvergray, London. Noon. Eighth. Latitude thirteen degrees thirty-nine north, longitude nineteen degrees six. Cable laid fourteen hundred and fifty-seven. Hope complete to-morrow. All well. Benest."



*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	THURSDAY, SEPTEMBER 8TH, 1892— <i>contd.</i>
1.30	<p>137·748 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1363·0 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1473·349 N.M.  Depth=2000 fms.  Drum=50½ revs. per min.=8·9 kts. Ship's engines=47 revs. per min. Weight on brake levers=3112 lbs. Dynamometer=20 cwt. Strophometer=44 to 48 revs.</p>
2.0	<p>142·179 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1366·8 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1477·780 N.M.  Depth=1950 fms.  Drum=50 revs. per min.=8·8 kts. Ship's engines=47 revs. per min. Weight on brake levers=3112 lbs. Dynamometer=20 cwt. Strophometer=44 to 49 revs.</p>
2.30	<p>146·628 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1370·6 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1482·229 N.M.  Depth=1900 fms.  Drum=50 revs. per min.=8·8 kts. Ship's engines=47 revs. per min. Weight on brake levers=3112 lbs. Dynamometer=20 cwt. Strophometer=44 to 48 revs.</p>
3.0	<p>151·042 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1374·4 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1486·643 N.M.  Depth=1900 fms.  Drum=49½ revs. per min.=8·7 kts. Ship's engines=46½ revs. per min. Weight on brake levers=3112 lbs. Dynamometer=20 cwt. Strophometer=44 to 48 revs.</p>
3.30	<p>155·467 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1378·3 N.M.  TOTAL CABLE LAID FROM F. NORONHA HUT=1491·068 N.M.  Depth=1850 fms.  Drum=50 revs. per min.=8·8 kts. Ship's engines=46½ revs. per min. Weight on brake levers=3112 lbs. Dynamometer=20 cwt. Strophometer=44 to 49 revs.</p>
4.0	<p>Light S by W breeze. Fine weather, but overcast and hazy. Moderate N'y swell.  Bar. 30·040 (81° F.). Temp. 79°·6 F. dry, 77° F. wet.  Sea surface 82° F.</p>

S.S. "SILVERTOWN."

Hour.  
P.M.

Paying out Light Deep Sea from Fernando—*contd.*

THURSDAY, SEPTEMBER 8TH, 1892—*contd.*

159·683 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B,"  
paid out from main tank. Patent log=1382·0 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1495·284 N.M.  
Depth=1800 fms.

Drum=47 revs. per min.=8·3 KTS. Ship's engines=45  
revs. per min. Weight on brake levers=3112 lbs. Dynamometer=20 cwt. Strophometer=40 to 44 revs.

4.10 Weight on brake levers gradually decreased to 2321 lbs.

4.30 163·866 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B,"  
paid out from main tank. Patent log=1385·5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1499·467 N.M.  
Depth=1800 fms.

Drum=47 revs. per min.=8·3 KTS. Ship's engines=46  
revs. per min. Weight on brake levers=2321 lbs. Dynamometer=19 cwt. Strophometer=40 to 44 revs.

5.0 168·165 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B,"  
paid out from main tank. Patent log=1389·1 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1503·766 N.M.  
Depth=1800 fms.

Drum=48½ revs. per min.=8·5 KTS. Ship's engines=46  
revs. per min. Weight on brake levers=2321 lbs. Dynamometer=19 cwt. Strophometer=44 to 46 revs.

5.30 172·599 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B,"  
paid out from main tank. Patent log=1393·0 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1508·200 N.M.  
Depth=1750 fms.

Drum=50 revs. per min.=8·8 KTS. Ship's engines=46  
revs. per min. Weight on brake levers=2321 lbs. Dynamometer=19 cwt. Strophometer=43 to 46 revs.

6.0 176·924 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B,"  
paid out from main tank. Patent log=1396·7 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1512·525 N.M.  
Depth=1700 fms.

Drum=49 revs. per min.=8·6 KTS. Ship's engines=46½  
revs. per min. Weight on brake levers=2321 lbs. Dynamometer=19 cwt. Strophometer=40 to 45 revs.

6.30 181·267 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B,"  
paid out from main tank. Patent log=1400·4 N.M.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	THURSDAY, SEPTEMBER 8TH, 1892— <i>contd.</i>
	TOTAL CABLE LAID FROM F. NORONHA HUT=1516·868 N.M. Depth=1700 fms. Drum=49 revs. per min.=8·6 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2321 lbs. Dynamo- meter=19 cwt. Strophometer=44 to 48 revs.
6.47	Weight on brake levers increased to 2523 lbs.
6.57	" " " 2787 "
7.0	185·684 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1404·1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1521·285 N.M. Depth=1650 fms. Drum=50 revs. per min.=8·8 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=2787 lbs. Dynamo- meter=19 cwt. Strophometer=44 to 48 revs.
7.24	Weight on brake levers increased to 2917 lbs.
7.30	190·085 N.M. of Light Deep Sea, No. 2147 Sec. "7 pt. B," paid out from main tank. Patent log=1407·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1525·686 N.M. Depth=1620 fms. Drum=49½ revs. per min.=8·7 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=2917 lbs. Dynamo- meter=20 cwt. Strophometer=42 to 48 revs.
8.0	Calm. Fine, but overcast, and hazy, with heavy dew. Calm sea, with moderate NE swell. Ship pitching. Bar. 30·080 (81° F.). Temp. 80° F. dry, 77°·5 F. wet. Sea surface 81° F. 194·411 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1411·6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1530·012 N.M. Depth=1600 fms. Drum=49 revs. per min.=8·67 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=2917 lbs. Dynamo- meter=20 cwt. Strophometer=42 to 46 revs.
8.18	Weight on brake levers increased gradually to 3249 lbs.
8.30	" " " " 3668 " 198·765 N.M. of "Light Deep" Sea, No. "2147, Sec. "7 pt. B," paid out from main tank. Patent log=1415·3 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1534·366 N.M.

S.S. "SILVERTOWN."

HOUR. P.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
	THURSDAY, SEPTEMBER 8TH, 1892— <i>contd.</i>
	Depth=1560 fms.
	Drum=49½ revs. per min.=8·76 KTS. Ship's engines=47 revs. per min. Weight on brake levers=3668 lbs. Dynamometer=variable. Strophometer=43 to 47 revs.
8.31	Weight on brake levers increased to 3751 lbs., bringing strain up to 27 cwt. without reducing the revolutions of paying-out drum.
8.44	Weight on brake levers decreased to 2851 lbs.
9.0	203·208 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1419·1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1538·809 N.M. Depth=1530 fms. Drum=50 revs. per min.=8·85 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=2851 lbs. Dynamometer=19 cwt. Strophometer=44 to 47 revs.
9.30	207·625 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1422·9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1543·226 N.M. Depth=1500 fms. Drum=50 revs. per min.=8·85 KTS. Ship's engines=46 revs. per min. Weight on brake levers=2851 lbs. Dynamometer=20 cwt. Strophometer=44 to 48 revs. Decreased ship's engines to 40 revs. per min.
9.40	Weight on brake levers decreased to 2191 lbs.
9.58	" " " " 1329 "
10.0	211·566 N.M. of Light Deep Sea, No. 2147, Sec. "7 pt. B," paid out from main tank. Patent log=1426·2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1547·167 N.M. Depth=1476 fms. Drum=44 revs. per min.=7·8 KTS. Ship's engines=40 revs. per min. Weight on brake levers=1329 lbs. Dynamometer=18 cwt. Strophometer=40 to 42 revs.
10.20	SPLICE in Light Deep Sea. No. 2147, between Secs "7 pt. B" and "10 pt. B," from main tank, passed off drum

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

HOUR.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
P.M.	THURSDAY, SEPTEMBER 8TH, 1892— <i>contd.</i>
	<p>Light Deep Sea, No. 2147, pt. Sec. "7" (pt. "B"), paid out by Drum measurement <math>\dots = 214\cdot083</math> N.M.</p> <p>Light Deep Sea, No. 2147, pt. Sec. "7" (pt. "B"), paid out by Factory measurement <math>= 214\cdot459</math> "</p> <p style="text-align: right;">Difference. <math>\dots = -0\cdot376</math> N.M.</p> <p>TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM FERNANDO NORONHA HUT <math>= 1550\cdot060</math> N.M.</p> <p>Patent log <math>= 1428\cdot3</math> N.M.</p> <p>Depth <math>= 1450</math> fms.</p> <p>Position { Lat. <math>14^{\circ} 46\cdot3</math> N. of splice { Long. <math>18^{\circ} 16\cdot2</math> W.</p>
10.30	<p><math>1\cdot295</math> N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log <math>= 1429\cdot3</math> N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT <math>= 1551\cdot355</math> N.M.</p> <p>Depth <math>= 1440</math> fms.</p> <p>Drum <math>= 43\frac{1}{2}</math> revs. per min. <math>= 7\cdot7</math> KTS. Ship's engines <math>= 40</math> revs. per min. Weight on brake levers <math>= 1329</math> lbs. Dynamometer <math>= 17</math> cwt. Strophometer <math>= 36</math> to <math>40</math> revs.</p>
11.0	<p><math>4\cdot962</math> N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log <math>= 1432\cdot3</math> N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT <math>= 1555\cdot022</math> N.M.</p> <p>Depth <math>= 1400</math> fms.</p> <p>Drum <math>= 41\frac{1}{2}</math> revs. per min. <math>= 7\cdot35</math> KTS. Ship's engines <math>= 40</math> revs. per min. Weight on brake levers <math>= 1329</math> lbs. Dynamometer <math>= 17\frac{1}{2}</math> cwt. Strophometer <math>= 35</math> to <math>37</math> revs.</p>
11.30	<p><math>8\cdot479</math> N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log <math>= 1435\cdot3</math> N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT <math>= 1558\cdot539</math> N.M.</p> <p>Depth <math>1350</math> fms.</p> <p>Drum <math>= 40</math> revs. per min. <math>= 7\cdot08</math> KTS. Ship's engines <math>= 40</math> revs. per min. Weight on brake levers <math>= 1329</math> lbs. Dynamometer <math>= 17\frac{1}{2}</math> cwt. Strophometer <math>= 33</math> to <math>36</math> revs.</p>
MIDNT.	<p>Calm, fine, but cloudy. Smooth sea with moderate N'yly swell. Ship pitching at times.</p> <p>Bar. <math>30\cdot086</math> (<math>81^{\circ}</math> F.). Temp. <math>80^{\circ}\cdot5</math> F. dry, <math>77^{\circ}\cdot8</math> F. wet. Sea surface <math>82^{\circ}</math> F.</p> <p><math>12\cdot034</math> N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log <math>= 1438\cdot3</math> N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT <math>= 1562\cdot094</math> .M.</p>



S.S. "SILVERTOWN."

Hour.  
A.M.

Paying out Light Deep Sea from Fernando—*contd.*

THURSDAY, SEPTEMBER 8TH, 1892—*contd.*

Depth=1350 fms.

Drum=40 revs. per min.=7.08 kts. Ship's engines=40 revs. per min. Weight on brake levers=1329 lbs. Dynamometer=17½ cwt. Strophometer=34 to 38 revs.

FRIDAY, SEPTEMBER 9TH, 1892.

- 0.8 Weight on brake levers decreased to 1261 lbs.
- 0.30 15.509 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1441.4 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1565.569 N.M.  
Depth=1300 fms.  
Drum 40 revs. per min.=7.08 kts. Ship's engines=40 revs. per min. Weight on brake levers=1261 lbs. Dynamometer=17½ cwt. Strophometer=34 to 38 revs.
- 1.0 18.952 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1444.5 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1569.012 N.M.  
Depth=1300 fms.  
Drum=38½ revs. per min.=6.8 kts. Ship's engines=40 revs. per min. Weight on brake levers=1261 lbs. Dynamometer=17½ cwt. Strophometer=34 to 38 revs.
- 1.10 Weight on brake levers decreased to 1193 lbs.
- 1.18 " " " 1056 "
- 1.21 " " " 987 "
- 1.30 22.481 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1447.6 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1572.541 N.M.  
Depth=1300 fms.  
Drum=40 revs. per min.=7.08 kts. Ship's engines=40 revs. per min. Weight on brake levers=987 lbs. Dynamometer=16½ cwt. Strophometer=34 to 38 revs.
- 2.0 26.080 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1450.8 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT=1576.140 N.M.]  
Depth=1250 fms.

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
A.M.	FRIDAY, SEPTEMBER 9TH, 1892— <i>contd.</i>
	Drum=40 revs. per min.=7.08 kts. Ship's engines=40 revs. per min. Weight on brake levers=987 lbs. Dynamometer=16 cwt. Strophometer=35 to 39 revs.
2.4	Weight on brake levers decreased to 849 lbs.
2.5	Lifted brakes a little to ease strain, but kept 849 lbs. on levers as a "stand bye."
2.30	29.724 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1453.9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1579.784 N.M. Depth=1250 fms. Drum=41 revs. per min.=7.25 kts. Ship's engines=40 revs. per min. Weight on brake levers=849 lbs. Dynamometer=16 cwt. Strophometer=35 to 39 revs.
3.0	33.238 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1457.1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1583.298 N.M. Depth=1250 fms. Drum=39½ revs. per min.=7.00 kts. Ship's engines=40 revs. per min. Weight on brake levers=849 lbs. Dynamometer=16 cwt. Strophometer=35 revs.
3.30	36.672 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B" paid out from main tank. Patent log=1460.3 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1586.732 N.M. Depth=1200 fms. Drum=39 revs. per min.=6.8 kts. Ship's engines=40 revs. per min. Weight on brake levers=849 lbs. Dynamometer=14 cwt. Strophometer=34 to 37 revs.
4.0	Light S'y airs. Fine, but cloudy. Smooth sea, with decreasing N'y swell. Bar. 30.090 (81° F.). Temp. 80° 3 F. dry, 76° F. wet. Sea surface 82° F. 40.061 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1463.5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1590.121 N.M. Depth=1200 fms. Drum=38 revs. per min.=6.7 kts. Ship's engines=40 revs. per min. Weight on brake levers=849 lbs. Dynamometer=14 cwt. Strophometer=32 to 37 revs.



*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour. A.M.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
	FRIDAY, SEPTEMBER 9TH, 1892— <i>contd.</i>
4.30	43·540 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1466·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1593·600 N.M. Depth=1200 fms. Drum=39 revs. per min.=6·9 KTS. Ship's engines=40 revs. per min. Weight on brake levers=849 lbs. Dyna- mometer=14 cwt. Strophometer=35 to 37 revs.
4.38	Position by { Lat. 15° 19'·0 N. observations { Long. 17° 51'·6 W. Current observed since noon yesterday=N 51° E, 5·6 N.M.= 0·35 KTS.
5.0	47·178 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1470·1 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1597·238 N.M. Depth=1150 fms. Drum=41 revs. per min.=7·2 KTS. Ship's engines=40½ revs. per min. Weight on brake levers=849 lbs. Dyna- mometer=14 cwt. Strophometer=36 to 38 revs.
5.30	50·874 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1473·5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1600·934 N.M. Depth=1150 fms. Drum=41½ revs. per min.=7·3 KTS. Ship's engines=40 revs. per min. Weight on brake levers=849 lbs. Dyna- mometer=14 cwt. Strophometer=36 to 38 revs.
5.35	Weight on brake levers decreased to 426 lbs.
5.45	Decreased ship's engines to 36 revs. per min.
5.50	Shipped counterpoise box, with 100 lbs. on dynamometer, and changed dynamometer scale.
6.0	54·329 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1476·5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1604·389 N.M. Depth=1050 fms. Drum=39 revs. per min.=6·9 KTS. Ships engines=36 revs. per min. Weight on brake levers=426 lbs. Dynamo- meter=14 cwt. Strophometer=32 to 35 revs.

S.S. "SILVERTOWN."

Hour.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
A.M.	FRIDAY, SEPTEMBER 9TH, 1892— <i>contd.</i>
6.4	Weight on brake levers decreased to 355 lbs.
6.10	Decreased ship's engines to 34 revs. per min.
6.30	57·518 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1479·2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1607·578 N.M. Depth=1000 fms. Drum=36 revs. per min.=6·3 KTS. Ship's engines=34 revs. per min. Weight on brake levers=355 lbs. Dynamometer=14 cwt. Strophometer=32 to 34 revs.
7.0	60·805 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1481·8 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1610·865 N.M. Depth=950 fms. Drum=37 revs. per min.=6·5 KTS. Ship's engines=34 revs. per min. Weight on brake levers=355 lbs. Dynamometer=10 cwt. Strophometer=33 to 35 revs. Position by { Lat. 15° 31'·2 N. observations { Long. 17° 44'·8 W. Difference or set since 4.38 a.m.=N 73° W, 1·7 N.M.
7.5	Weight on brake levers decreased to 284 lbs.
7.15	Since 4 a.m. filled main ballast tank with water=360 tons weight.
7.18	62·743 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1483·6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1612·803 N.M. Depth=900 fms. CHANGED COURSE TO N 56½° E. CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, N 35° E=156·192 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 35° E=139·840 N.M. SLACK=11·69%. (For Courses made good see Position Sheet.) Position { Lat. 15° 33'·5 N. { Long. 17° 43'·0 W.
7.30	64·109 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1484·6 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1614·169 N.M. Depth=850 fms.

S.S. "SILVERTOWN."

HOUR.	Paying out Light Deep Sea from Fernando— <i>contd.</i>
A.M.	FRIDAY, SEPTEMBER 9TH, 1892— <i>contd.</i>
	Drum=37 revs. per min.=6.54 kts. Ship's engines=34 revs. per min. Weight on brake levers=284 lbs. Dynamometer=9 cwt. Strophometer=35 to 37 revs.
7.45	Increased ship's engines to 38 revs. per min.
8.0	Calm. Fine, but cloudy. Smooth sea, with slight NE swell. Bar. 30.130 (82° F.). Temp. 81° 5 F. dry, 77° 6 F. wet. Sea surface 83° F. 67.635 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1487.5 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1617.695 N.M. Depth=850 fms. Drum=40 revs. per min.=7.08 kts. Ship's engines=38 revs. per min. Weight on brake levers=284 lbs. Dynamometer=10 cwt. Strophometer=36 to 37 revs.
8.30	71.263 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1490.7 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1621.323 N.M. Depth=850 fms. Drum=41 revs. per min.=7.26 kts. Ship's engines=38 revs. per min. Weight on brake levers=284 lbs. Dynamometer=12 cwt. Strophometer=36 to 38 revs.
9.0	74.948 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1493.9 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1625.008 N.M. Depth=850 fms. Drum=41½ revs. per min.=7.35 kts. Ship's engines=38 revs. per min. Weight on brake levers=284 lbs. Dynamometer=12 cwt. Strophometer=38 to 39 revs.
9.30	78.689 N.M. of Light Deep Sea, No. 2147, Sec. "10 pt. B," paid out from main tank. Patent log=1497.2 N.M. TOTAL CABLE LAID FROM F. NORONHA HUT=1628.749 N.M. Depth=800 fms. Drum=42 revs. per min.=7.43 kts. Ship's engines=39 revs. per min. Weight on brake levers=284 lbs. Dynamometer=12 cwt. Strophometer=37 to 39 revs.
9.36	SPLICE in Light Deep Sea, No. 2147, between Secs. "10 pt. B" and "9B," from main tank, passed off drum.

S.S. "SILVERTOWN."

Hour.  
A.M.

Paying out Light Deep Sea from Fernando—*contd.*

FRIDAY, SEPTEMBER 9TH, 1892—*contd.*

Light Deep Sea, No. 2147, pt. Sec. "10" (pt.  
"B"), paid out by Drum measurement .. = 79·456 N.M.  
Light Deep Sea, No. 2147, pt. Sec. "10" (pt.  
"B"), paid out by Factory measurement = 79·510 ,,  
Difference. . . . . = - 0·054 N.M.

TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM  
FERNANDO NORONHA HUT = 1629·570 N.M.

Patent log = 1498·1 N.M.

Depth = 790 fms.

Position { Lat. 15° 41'·2 N.  
of splice { Long. 17° 29'·6 W.

10.0 3·009 N.M. of Light Deep Sea, No. 2147, Sec. "9B," paid  
out from main tank. Patent log = 1500·5 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT = 1632·579 N.M.  
Depth = 770 fms.

Drum =  $42\frac{1}{2}$  revs. per min. = 7·52 KTS. Ship's engines = 39  
revs. per min. Weight on brake levers = 284 lbs. Dynamo-  
meter = 12 cwt. Strophometer = 37 to 39 revs.

10.30 6·756 N.M. of Light Deep Sea, No. 2147, Sec. "9B," paid  
out from main tank. Patent log = 1503·9 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT = 1636·326 N.M.  
Depth = 750 fms.

Drum = 42 revs. per min. = 7·43 KTS. Ship's engines = 39  
revs. per min. Weight on brake levers = 284 lbs. Dynamo-  
meter = 12 cwt. Strophometer = 37 to 39 revs.

10.41 Decreased ship's engines to 32 revs. per min.

11.0 10·314 N.M. of Light Deep Sea, No. 2147, Sec. "9B," paid  
out from main tank. Patent log = 1507·0 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT = 1639·884 N.M.  
Depth = 750 fms.

Drum =  $40\frac{1}{2}$  revs. per min. = 7·16 KTS. Ship's engines = 33  
revs. per min. Weight on brake levers = 284 lbs. Dynamo-  
meter = 12 cwt. Strophometer = 32 to 34 revs.

11.25 (Observed noon.) 13·052 N.M. of Light Deep Sea, No. 2147,  
Sec. "9B," paid out from main tank. Patent log = 1509·5 N.M.  
TOTAL CABLE LAID FROM F. NORONHA HUT = 1642·622 N.M.

S.S. "SILVERTOWN."

Hour. A.M.	<p>Paying out Light Deep Sea from Fernando—<i>contd.</i></p> <p>FRIDAY, SEPTEMBER 9TH, 1892—<i>contd.</i></p> <p>Depth=850 fms.</p> <p>CABLE, BY INDICATOR, CORRECTED, PAID OUT SINCE OBSERVED NOON YESTERDAY=186·011 N.M.</p> <p>DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=166·895 N.M.</p> <p>SLACK=11·46°/°.</p> <p>Position { Lat. 15° 47'·4 N. Long. 17° 18'·9 W.</p> <p>Current observed since 7 a.m.=S 76° E, 2·1 N.M.=0·5 KT.</p>
11.30	<p>13·606 N.M. of Light Deep Sea, No. 2147, Sec. "9B," paid out from main tank. Patent log=1509·9 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=1643·176 N.M.</p> <p>Depth=900 fms.</p> <p>Drum=37 revs. per min.=6·55 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=12 cwt. Strophometer=33 to 34 revs.</p>
NOON.	<p>Light WNW breeze. Fine and bright, but cloudy. Calm sea, with slight N'y swell.</p> <p>Bar. 30·120 (84° F.). Temp. 87°·8 F. dry, 80°·8 F. wet. Sea surface 83°·8 F.</p> <p>16·881 N.M. of Light Deep Sea, No. 2147, Sec. "9B," paid out from main tank. Patent log=1512·7 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=1646·451 N.M.</p> <p>Depth=850 fms.</p> <p>Drum=37 revs. per min.=6·55 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=12 cwt. Strophometer=30 to 33 revs.</p>
P.M. 0.30	<p>19·923 N.M. of Light Deep Sea, No. 2147, Sec. "9B," paid out from main tank. Patent log=1515·4 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=1649·493 N.M.</p> <p>Depth=850 fms.</p> <p>Drum=34½ revs. per min.=6·1 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=12 cwt. Strophometer=30 to 32 revs.</p>
0.53	<p>Sighted Buoy 20 R on St. Louis End, bearing N 24° E. No mark-buoy in sight.</p> <p>22·121 N.M. of Light Deep Sea, No. 2147, Sec. "9B," paid out from main tank. Patent log=1517·6 N.M.</p> <p>TOTAL CABLE LAID FROM F. NORONHA HUT=1651·691 N.M.</p>



*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.  
P.M.

**Paying out Light Deep Sea from Fernando—*contd.***

FRIDAY, SEPTEMBER 9TH, 1892—*contd.*

Depth=700 fms.

CHANGED COURSE TO N 24° E.

CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, N 56½° E=38·888 N.M.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 56½° E=35·255 N.M.

SLACK=10·30%. (For Courses made good see Position Sheet.)

Position { Lat. 15° 50'·62 N.  
Long. 17° 11'·03 W.

Current observed since noon=S 37° E, 1·6 N.M.=1·0 KT.

1.0 22·909 N.M. of Light Deep Sea, No. 2147, Sec. "9B," paid out from main tank. Patent log=1518·2 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1652·479 N.M.

Depth=700 fms.

Drum=34 revs. per min.=6·02 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=12 cwt. Strophometer=29 to 31 revs.

1.30 25·641 N.M. of Light Deep Sea, No. 2147, Sec. "9B," paid out from main tank. Patent log=1520·7 N.M.

TOTAL CABLE LAID FROM F. NORONHA HUT=1655·211 N.M.

Depth=700 fms.

Drum=31 revs. per min.=5·48 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=10 cwt. Strophometer=29 to 34 revs.

1.47 Approaching buoy on St. Louis End. Stopped ship's engines.

1.55 Weight on brake levers increased to 841 lbs.

1.57 Moving ship's engines as required to bring ship up to buoy.

2.5 Lowered starboard surf boat.

2.9 Sent surf boat away to dismantle buoy.

2.11 Weight on brake levers increased to 981 lbs.

2.13 Ship at buoy.

Corrected position { Lat. 15° 55'·0 N.  
of buoy { Long. 17° 8'·2 W (?), by chronometer.

S.S. "SILVERTOWN."

Hour.

P.M.

Up to Buoy on St. Louis End.

FRIDAY, SEPTEMBER 9TH, 1892—*contd.*

Current observed since noon=S 48° E, 2·3 N.M.=0·7 KTS.

Passed rope from starboard picking-up drum over starboard bow sheave to boat at buoy.

2.15 Cable over stern almost up and down, and stopped with brakes. Dynamometer=40 cwt.

2.16 Drum rope shackled on to moorings of buoy on St. Louis End. Commenced to heave in on rope.

2.20 Stopped heaving in on rope to clear buoy from moorings.

2.48 Buoy cleared from its moorings.

Cable on Fernando Noronha End running out according to strain, which varies from 20 to 30 cwt.

2.59 Resumed heaving in on moorings on St. Louis End with starboard picking-up-drum.

3.0 Cable on Fernando Noronha End running out according to strain, 20 to 40 cwt. Checking cable as required with brakes. Buoy 20 hoisted on board.

3.18 Starboard surf boat hoisted up.

3.24 Buoy rope of moorings on St. Louis End suddenly parted in coming in over bow sheave. Strain at times 3 tons. On moorings not having exceeded 3·8 tons. Only 433 fms. of buoy rope picked up out of 800 fms. The wires of the rope at the break completely destroyed, much corroded with rust, and very brittle.

3.25 Set about preparing to cut and buoy cable on Fernando Noronha End.

3.36 Bent moorings of Buoy 12 on to Fernando Noronha End on stern baulks, and put engine of paying-out machine in gear. Temperature in main cable tank=84½° F.

3.42 Tests on Fernando Noronha End very satisfactory; and the staff at Fernando Noronha Hut instructed to watch for signals from ship in 2 hours time, keeping constant watch day and night until further advised.

3.45 Bent a slip rope on to Fernando Noronha End on stern baulks, and let the slip take strain of cable.



S.S. "SILVERTOWN."

Hour.  
P.M.

Buoying Fernando Noronha End off  
St. Louis.

FRIDAY, SEPTEMBER 9TH, 1892—*contd.*

3.47 Cut Fernando Noronha End (Light Deep Sea Cable, No. 2147, Sec. "9B," from main tank) on stern baulks, and set about sealing the end.

Light Deep Sea, No. 2147, Sec. "9B," paid  
out by Drum measurement .. .. = 27·812 N.M.

Light Deep Sea, No. 2147, Sec. "9B," paid  
out by Factory measurement .. .. = 27·883 ,,

Difference.. .. = — 0·071 N.M.

This cut is found to be 185 yards = 0·091 N.M. outside the 28th mile-mark in Sec. "9B," now remaining in main tank.

TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM FERNANDO NORONHA HUT = 1657·453 N.M.

Total amount of Light Deep Sea, No. 2147, Sec. "9B," now remaining in main tank = 53·116 N.M.

CABLE, BY INDICATOR (CORRECTED TO 9.41 A.M. 11.9.92) PAID OUT ON LAST COURSE, N 24° E = 5·756 N.M.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 24° E = 4·800 N.M.

SLACK = 19·91°/.

4.5 Fernando Noronha End sealed.  
Light WNW breeze. Fine, bright, and clear. Slight N'y swell. Calm sea.

4.6 Let go Fernando Noronha End from stern baulks, and commenced to lower away on moorings of buoy, with starboard picking-up drum, over starboard bow sheave.

4.43 Let go Buoy No. 12 B on Fernando Noronha End.  
Position { Lat. 15° 55'·0 N.  
Long. 17° 9'·0 W.

Moorings of Buoy 12 B:—

1  $\frac{3}{4}$ " bridle.

30 fms.  $\frac{3}{4}$ " chain.

15 ,, side rope.

4 200-fm. lengths of 4 × 4 buoy rope.

1 mushroom = 4 cwt. 0 qrs. 27 lbs.

4.55 Lowered port surf boat and sent it away to put two lamps on Buoy 12 B.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.	Grappling for St. Louis End.
P.M.	FRIDAY, SEPTEMBER 9TH, 1892— <i>contd.</i>
5.0	Cable hands getting all gear in readiness to commence grappling for St. Louis End.
5.9	Surf boat returned and was at once hoisted up.
6.45	Set on for position to take Drag No. 1.
7.20	Buoy 12 B on Fernando Noronha End abeam. Set course to the NNE for 2 miles.
7.40	In position. Stopped ship and commenced to lower grapnel for Drag No. 1. Buoy 12 B bearing SSW.
8.0	Light WNW breeze. Fine, but cloudy. Hazy all round horizon. Smooth sea, with slight N'y swell. Bar. 30.103 (84° F.). Temp. 81°·8 F. dry, 78° F. wet. Sea surface 82.5 F. During this evening filled fore ballast tank with water=230 tons weight.
8.15	Grapnel on bottom. About 750 fms. of grappling rope outboard. Position { Lat. 15° 56'·5 N. { Long. 17° 7'·5 W.
8.25	Stopped paying out on grapnel. Shackle of 4th rope at surface of water=800 fms. of 3 × 3 × 4 grappling rope paid out with 20 fms. of $\frac{3}{4}$ " chain and one "jamming" grapnel attached.
8.30	Ship drifting to the SE. Lights on Buoy 12 B not in sight.
9.40	No signs of having hooked cable, and ship's position doubtful. Commenced to pick up grapnel.
10.35	Grapnel at bows. Set on to find Buoy 12 B on Fernando Noronha End. Length of Drag No. 1=2 $\frac{1}{4}$ N.M., S 35 E. Position when { Lat. 15° 54'·5 N. { Long. 17° 6'·3 W. grapnel up
11.10	Sighted Buoy 12 B on port beam, one lamp on buoy burning very badly, the other out.
11.25	Rounded buoy and set on for position to take Drag No. 2. Course and distance from buoy, N 8° E, 4.3 N.M.

*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

HOUR.	Grappling for St. Louis End— <i>contd.</i>
P.M.	FRIDAY SEPTEMBER 9TH, 1892— <i>contd.</i>
MIDNT.	Light NW breeze. Fine, but cloudy. Slight N'y swell. Bar. 30·106 (84° F.). Temp. 80°·8 F. dry, 77°·6 F. wet. Sea surface 81°·8 F.
A M.	
0.15	In position. Stopped ship and commenced to lower grapnel for Drag No. 2.
0.55	Stopped paying out on grapnel. 852 fms. of 3 × 3 × 4 grappling rope paid out, with 20 fms. of $\frac{3}{4}$ " chain and a patent "jamming" grapnel attached. Position { Lat. 15° 58'·4 N. of ship { Long. 17° 7'·7 W. Depth about 700 fms.
1.0	Ship drifting to the SE.
3.30	Strain steady at 2 $\frac{1}{4}$ tons.
4.0	Light NNW airs. Fine, but overcast. Bar. 30·090 (84° F.). Temp. 80° F. dry, 77° F. wet. Sea surface 81°·8 F.
4.5	Raised grapnel clear of bottom, but finding no strain on it lowered away again.
5.55	Sighted Buoy 12 B on Fernando Noronha End bearing S 26° W about 3 n.m. distant.
6.35	Buoy 12 B bearing S 29 $\frac{1}{2}$ ° W.
7.7	" " " S 34° W. Ship about 3 cables' length from line of cable.
7.45	Buoy 12 B bearing S 40° W. Strain steady at 2 $\frac{1}{4}$ tons throughout this drag.
8.0	Light NW breeze. Fine and clear. Hazy horizon. Calm sea with slight N'y swell. Bar. 30·130 (86° F.). Temp. 81°·3 F. dry, 78° F. wet. Sea surface 82°·7 F. Buoy 12 B bearing S 42° W. Ship's head ENE. Ship about a cable's length from line of cable.
8.30	Buoy 12 B bearing S 50° W.
9.15	" " " S 54° W.
9.22	" " " S 56° W, about 2 $\frac{1}{2}$ n.m. distant.

S.S. "SILVERTOWN."

HOUR. A.M.	Grappling for St. Louis End— <i>contd.</i>
	SATURDAY, SEPTEMBER 10TH, 1892— <i>contd.</i>
9.23	Commenced to pick up grapnel. Length of drag No. 2= 2.5 N.M., S 55° E. Position { Lat. 15° 56'·8 N. { Long. 17° 5'·1 W.
9.36	700 fms. of rope and chain outboard. Strain steady at 2¼ tons.
9.40	640 fms. of rope and chain outboard. Strain steady at 2¼ tons. Buoy 12 B bearing S 50° W.
9.48	530 fms. of rope and chain outboard. Strain steady at 2¼ tons. Buoy 12 B bearing S 48° W.
9.53	420 fms. of rope and chain outboard. Strain fell to zero
10.12	Grapnel at bows, bearing no signs of having hooked cable. A quantity of weed on grapnel.
10.25	Set on for Buoy 12 B.
11.15	Rounded Buoy 12 B. Course and distance run since 10.25 a.m.=S 51° W, 4.0 N.M. Changed course to N 12° W for 2.8 N.M. to lower grapnel for Drag No. 3
11.48	Stopped ship and commenced to lower grapnel for Drag No. 3. Took a sounding; depth=673 fms. Buoy 12 B bearing S 1° W.
NOON.	Light NNW breeze. Fine and clear. Bar. 30.104 (82° F.). Temp. 83°·4 F. dry, 77°·4 F wet; Sea surface 83°·2 F.
P.M. 0.27	Stopped paying out on grapnel 830 fms. of 3×3×4 grappling rope paid out, with 20 fms. of ¾" chain and 1 long-prong grapnel=2 cwt. 0 qrs. 8 lbs. attached. Buoy 12 B bearing S 7° W. Ship dragging to the SE. Moving ship's engines ahead occasionally. Position { Lat. 15° 57'·4 N. { Long. 17° 8'·7 W.
0.42	Buoy 12 B bearing S 12° W. Dragging strain 2¼ tons.
1.0	" " " " " "

S.S. "SILVERTOWN."

Hour.  
P.M.

**Grappling for St. Louis End—*contd.***

SATURDAY, SEPTEMBER 10TH, 1892—*contd.*

- 1.30 Buoy 12 B bearing S 24° W. Dragging strain 2¼ tons.
- 1.37 " " S 27° W. " "
- 2.0 " " S 30° W. Paid out another 50 fms. of grappling rope.
- 2.41 Buoy 12 B bearing S 43° W. Strain steady at 2.5 tons. Ship now heading S. Engines easy ahead.
- 3.0 Buoy 12 B bearing S 50° W. Strain steady at 2.5 tons. Ship now heading S. Engines easy ahead.
- 3.26 Buoy 12 B bearing S 70° W. Strain steady at 2.5 tons. Ship now heading S. Engines easy ahead.
- 3.51 Buoy 12 B bearing W. Strain steady at 2.5 tons. Ship now heading S. Engines easy ahead.
- 4.12 Buoy 12 B bearing N 76° W. Strain steady at 2.5 tons. Ship now heading S. Engines easy ahead.  
Light NW by W breeze. Fine clear weather. Calm sea, with slight swell.
- 4.16 Stopped ship and commenced to pick up grapnel, being well beyond line of cable, and no indications given of having hooked cable. Length of Drag No. 3=4.1 N.M., S 23° E.  
Position { Lat. 15° 53'3.  
Long. 17° 6'5.
- 5.2 Grapnel at bows, bearing no signs of having hooked cable. Set on for Buoy 12 B, which bears N 64° W, 2½ N.M. distant.
- 5.45 Close by Buoy 12 B. Stopped ship and sent surf boat away to put lights on buoy.
- 6.0 Surf boat returned to ship with the two lamps that were put on the buoy yesterday.
- 6.5 Surf boat hoisted up. Set on for position to take Drag No. 4. Course and distance=about 1 N.M. SE.
- 6.50 Stopped ship and commenced to lower grapnel for Drag No. 4.  
Buoy 12 B bearing N 29° W, 1.8 N.M. distant.  
Position { Lat. 15° 54'0 N.  
Long. 17° 7'0 W.

S.S. "SILVERTOWN."

Hour.  
P.M.

Grappling for St. Louis End—*contd.*

SATURDAY, SEPTEMBER 10TH, 1892—*contd.*

7.36	Stopped paying out on grapnel. 900 fms. of $3 \times 3 \times 4$ grappling rope paid out, with 20 fms. of $\frac{3}{4}$ " chain and a long-prong grapnel, weighing 2 cwt. 0 qrs. 8 lbs. attached. Buoy 12 B bearing N $45^\circ$ W. Set on easy ahead, dragging to the N'd.
8.0	Light NW by N wind. Fine and clear. Bar. 30.105, $83^\circ$ F. Temp. $82^\circ.3$ F. dry, $76^\circ.8$ F. wet. Sea surface $82^\circ$ F. Buoy 12 B bearing N. $67^\circ$ W. Dragging strain = 2.3 tons.
8.22	" " N $82^\circ$ W. " " "
8.50	" " S $75^\circ$ W. " " "
9.20	" " S $61^\circ$ W. " " "
10.0	" " S $55^\circ$ W. " " "
10.10	" " S $51^\circ$ W. Stopped ship's engines.
10.14	Set on ahead again, engines 20 revs. per min.
10.23	Resumed paying out grappling rope, to let ship get way again.
10.30	Strain rose slowly to 3.5 tons.
10.32	Stopped paying out grappling rope; 1000 fms. are now outboard.

Recovery of St. Louis End.

10.40	Increased ship's engines to 22 revs. per min. <sup>1</sup>
10.45	Buoy 12 B bearing S $47^\circ$ W. Dynamometer indicating a strain of about 4 tons.
10.55	Buoy still on same bearing, and strain on grappling rope steady at $4\frac{1}{2}$ tons. Cable apparently hooked. Stopped ship's engines.
10.56	Commenced to pick up grapnel. Length of Drag No. 4 = 2.8 N.M. to the N'd.



*Laying the Fernando Noronha—St. Louis Section.*

S.S. "SILVERTOWN."

Hour.  
P.M.

**Recovery of St. Louis End—*contd.***

SATURDAY, SEPTEMBER 10TH, 1892—*contd.*

- 11.25 Picking up on grapnel slowly, strain 2 to  $3\frac{1}{2}$  tons.
- 11.30 Buoy " 12 B on same bearing. " 2 to 5 "
- 11.38 Grapnel off bottom and strain 2 to  $4\frac{1}{2}$  tons.
- MIDNT. Light NNW wind. Fine and clear. Calm sea with slight N'y swell.  
Bar. 30.094 (80° F.). Temp. 78°·8 F. dry, 74°·6 F. wet. Sea surface 81°·2 F.  
Strain on grappling rope  $3\frac{1}{2}$  to 5 tons.

SUNDAY, SEPTEMBER 11TH, 1892.

A.M.  
0.34

Grapnel at bows with St. Louis cable, Heavy Deep Sea, No. 2148, pt. Sec. "1," laid from main tank on the 16th May last, on 3 prongs. Set about bending on seizing chains of drum ropes, port drum rope on to the seaward side and starboard drum rope on to the St. Louis side of the bight on grapnel. Buoy 12 B bearing S 55° W, about 2 N.M.

Position { Lat. 15° 56'·75 N.  
              { Long. 17° 6'·30 W.

- 0.53 Drum ropes now holding bight of cable; cut the bight and got grapnel inboard.
- 1.0 Took starboard drum rope to and commenced to heave in on St. Louis End with starboard picking-up drum. Veering away on port drum rope on seaward end as necessary.
- 1.4 St. Louis End of cable on drum.
- 1.6 Stopped picking up on St. Louis End, as enough inboard, and abaft drum, for splice with cable in main tank.
- 1.10 Cut 2 fms.=0.002 N.M. off St. Louis End for damaged sheathing and attached lead from testing room.
- 1.13 Bent stoppers on St. Louis cable on bow baulks.
- 1.20 Spoke St. Louis and commenced tests.



S.S. "SILVERTOWN."

HOOR.  
A.M.

**Recovery of St. Louis End—contd.**

SUNDAY, SEPTEMBER 11TH, 1892—contd.

- 1.25 Bent stoppers on port drum rope on seaward piece of cable. Cable hands making all ready for splicing St. Louis End on to Light Deep Sea cable, No. 2147, Sec. "9B," in main tank, and to pay out cable from main tank with starboard picking-up drum to Buoy 12 B on Fernando Noronha End.
- 1.40 Hauled top end of Light Deep Sea, No. 2147, Sec. "9B," out of main tank and commenced to open it out for splice with St. Louis End.

**Paying out towards Buoy on Fernando End.**

- 2.22 Tests on St. Louis End satisfactory. Commenced to open out St. Louis End (Heavy Deep Sea type, No. 2148, pt. Sec. "1") for splice with cable in main tank.
- 2.50 Commenced joint between St. Louis End and Light Deep Sea in main tank.  
12 fms.=0·012 N.M. of Light Deep Sea, No. 2147, Sec. "9B," in main tank, expended for this splice, reducing the length of that section remaining in main tank to 25·221 N.M.
- 3.53 Joint between St. Louis End and Light Deep Sea cable in main tank finished.
- 4.0 Buoy 12 B on Fernando Noronha End bearing S 53° W.
- 4.15 Tests on above joint satisfactory. Commenced splice.
- 4.20 Testing room stopped cable hands making splice.
- 4.40 Resumed making splice.
- 5.35 Splice between St. Louis End (Heavy Deep Sea type, No. 2148, pt. Sec. "1," laid on the 16th May last) and Light Deep Sea, No. 2147, Sec. "9B," in main tank, completed, and bight coiled down in main tank ready for paying out.  
Sent the following telegrams to Mr. Crouch at St. Louis Hut:—  
1. "Benest to Crouch. Do not send the following messages to Jeffery, Hamilton, and Silvergray unless cable to Noronha is all right. Ship will arrive off St. Louis about 4.30 this afternoon. Send results of tests by pirogue on our arrival."

S.S. "SILVERTOWN."

Hour.  
A.M.

**Paying out towards Buoy on Fernando End—*contd.***

SUNDAY, SEPTEMBER 11TH, 1892—*contd.*

2. "Jeffery, Cadiz. Senegal Noronha Section completed. Advise Vasquez. Please instruct Bechervaise proceed to Confital. Benest, 11th."

3. "Hamilton, Tenerife. 'Silvertown' arrives Friday morning, 16th. Please have four hundred tons of coal ready. Quick dispatch. Benest."

4. "Silvergray, London. Senegal Noronha Section completed. All well. Benest, 11th."

5.45 Put turns of port drum rope, attached to the seaward piece of the bight of cable brought up on grapnel round port picking-up drum ready for picking up the piece of cable while laying cable from main tank to Buoy 12 B.

5.50 Crew set about getting starboard anchor chain unshackled from anchor and hauled inside the hawsepipe, so as to leave starboard bow clear for laying cable.

6.18 Anchor chain now cleared from starboard bow.

6.24 Took stoppers off St. Louis End on bow baulks and set on easy ahead.

6.27 Increased ship's engines to "half speed."

6.28 Decreased ship's engines to easy=22 revs. per min.

Commenced to pay out on St. Louis End, Light Deep Sea, from main tank, with starboard picking-up drum, over starboard bow sheave. SPLICE between St. Louis End (Heavy Deep Sea type) and Light Deep Sea in main tank passed off drum. Put engine of picking-up machine (starboard drum) out of gear.

Position { Lat.  $15^{\circ} 56' 75''$  N.  
of splice { Long.  $17^{\circ} 6' 3''$  W.

6.31 Cut port drum rope on bow baulks and let go the seaward piece of the bight of cable brought up on grapnel at 0.34 a.m., as it is decided to abandon this piece of cable rather than run any risk in trying to pick it up while laying cable. The results of tests taken at St. Louis Hut, and on board, after speaking ship at 1.20 a.m., shew the total length cut off St. Louis End to-day= $3.960$  N.M., *i.e.*, 2 fms. cut off for damaged sheathing at 1.10 a.m., and  $3.958$  N.M. of cable now abandoned.

S.S. "SILVERTOWN."

Hour.  
A.M.

Paying out towards Buoy on Fernando End—*contd.*

SUNDAY, SEPTEMBER 11<sup>TH</sup>, 1892—*contd.*

Original length of Heavy Deep Sea, No.

2148, pt. Sec. "1," on St. Louis End = 16·990 N.M.

Cut off for damaged sheathing = 0·002 N.M. } = 3·960 "

Abandoned.. .. = 3·958 ,, }

Length now remaining on St. Louis End = 13·030 N.M.

6.32 Put brakes down and stopped paying out on St. Louis End. Ship getting round on to course for buoy.

6.36 Ship now heading for buoy, which bears S 55° W. Eased brakes and let cable run. Course S 46 W.

6.50 Engines = 23 revs. per min. Drum = 26 revs. per min. = 4·6 KTS.

7.0 Engines = 23 revs. per min. Drum = 23 revs. per min. = 4·0 KTS.

7.5 Engines = 23 revs. per min. Drum = 21 revs. per min. = 3·7 KTS. 2 N.M. of cable paid out from main tank.

7.13 Engines = 23 revs. per min. Drum = 22 revs. per min. = 3·9 KTS. 2½ N.M. of cable paid out from main tank.

7.20 Approaching Buoy 12 B on Fernando Noronha End. Stopped ship's engines.

7.21 3 N.M. of Light Deep Sea cable paid out from main tank. Cable running freely over starboard bow.

7.25 Moving ship's engines as required to bring ship up to buoy.

7.30 3½ N.M. of Light Deep Sea cable paid out from main tank.

7.37 Lowered port surf boat and sent it away to dismantle buoy. Ship's head coming round to wind.

7.38 Checked cable with brakes, paying out according to strain.

7.40 Passed rope from port picking-up drum to boat at buoy. Strong breeze with choppy sea. Wheeble, leading hand in charge of boat, injured his arm while shackling on. It was badly jammed between boat's stern and buoy.

S.S. "SILVERTOWN."

Hour.  
A.M.

**Paying out towards Buoy on Fernando End—*contd.***

SUNDAY, SEPTEMBER 11<sup>TH</sup>, 1892—*contd.*

- 7.46 Drum rope shackled on to moorings of buoy. Commenced to pick up buoy rope on Fernando End with port picking-up drum. Paying out on St. Louis End, Light Deep Sea from main tank, as required.
- 7.50 Slipped Buoy 12 from moorings.
- 7.55 Moorings of buoy coming inboard free of strain.
- 8.0 Moderate N'y wind. Fine and clear. Slight sea and swell from NE.  
Bar. 30·100 (82° F.). Temp. 80° F. dry, 76°·3 F. wet. Sea surface 82°·3 F.  
Hoisted Buoy 12 up into port fore rigging.

**Making Final Splice.**

- 8.10 Hoisted up port surf boat.
- 8.24 Mushroom of moorings at bows.
- 8.30 Fernando Noronha End (Light Deep Sea, No. 2147, Sec. "9B," from main tank), buoyed at 4·43 p.m. on 9th inst., came in board.
- 8.31 Stopped picking up on Fernando Noronha End, as enough inboard for splice.
- 8.38 Bent stoppers on Fernando Noronha End on bow baulks.
- 8.45 Cut 4 fms.=0·004 N.M. off Fernando Noronha End for damaged sheathing and attached lead from testing room.
- 8.50 Bent stoppers on St. Louis End on bow baulks.
- 8.53 Cut St. Louis End (Light Deep Sea, No. 2147, Sec. "9B," from main tank, near starboard picking-up drum, and commenced to open it out for final splice with Fernando Noronha End. 10 fms.=0·010 N.M. cut off St. Louis End for this splice.

S.S. "SILVERTOWN."

Hour.

A.M.

Making Final Splice—contd.

SUNDAY, SEPTEMBER, 11TH, 1892—contd.

Light Deep Sea, No. 2147, pt. Sec. "9B," paid	
out .. .. .	=3·793 N.M.
Cut off for the final splice .. .. .	=0·010 "
LIGHT DEEP SEA, No. 2147, PT. SEC. "9B."	
Laid .. .. .	=3·783 N.M.
TOTAL CABLE LAID BY DRUM MEASUREMENT BETWEEN	
ST. LOUIS AND FERNANDO ENDS=3·783 N.M.	
Light Deep Sea, No. 2147, pt. Sec. "9B,"	
paid out by Drum measurement .. .. .	=3·783 N.M.
Light Deep Sea, No. 2147, pt. Sec. "9B,"	
paid out by Factory measurement .. .. .	=3·804 "

Difference .. .. . =0·021 N.M.

Length of Light Deep Sea, No. 2147, pt. Sec. "9B," remaining in main tank=21·407 N.M.

NOTE.—The length of Heavy Deep Sea cut off St. Louis End and abandoned is 0·156 N.M. in excess of the length of Light Deep Sea from main tank laid to replace it.

THE TOTAL LENGTH OF CABLE LAID FROM ST. LOUIS HUT TO THIS (FINAL) SPLICE=44·701 N.M.

CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, S 46° W=3·804 N.M.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 46° W=2·500 N.M.

SLACK=52·16%.

- 9.2      Lead from testing room attached to St. Louis End
- 9.28      Sent the following telegram to Fernando Noronha:—  
 "Robert Gray, Pernambuco. Now about to make final splice. Leave you to deal with complimentary telegrams. Benest, 11th."
- 9.38      Tests on St. Louis End satisfactory.
- 9.40      Test on Fernando Noronha End satisfactory. Mr. Schneider at Fernando Noronha Cable Hut instructed to test the completed section in three hours' time, when the final splice should be completed.
- 9.41      Commenced to open out Fernando Noronha End (Light Deep Sea) for final splice. Two fms. cut off F. Noronha End for this (final) splice which, including the 4 fms. cut off at

S.S. "SILVERTOWN."

HOOR.

**Making Final Splice—*contd.***

A.M.

SUNDAY, SEPTEMBER 11<sup>TH</sup>, 1892—*contd.*

8.45 a.m., makes a total of 6 fms.=0.006 N.M cut off Fernando Noronha End to-day.

Length of Light Deep Sea, No. 2147, pt.

Sec. "9B," paid out on Fernando End .. =27.883 N.M.

Cut off .. .. = 0.006 "

Remaining on Fernando End .. =27.877 N.M.

TOTAL CABLE, by Factory measurement, LAID FROM FERNANDO NORONHA HUT TO THIS (FINAL) SPLICE=1657.447 N.M.

9.53 Commenced joint of the final splice between the St. Louis and Fernando Noronha Ends.

9.58 A slight strain coming on St. Louis End. Stopped making joint. Strain relieved; proceeded with joint.

11.48 After two unsuccessful attempts to make the joint of the final splice, owing to the presence of air bubbles in the core, third joint was commenced; 2 or 3 feet cut off each of the cables.

NOON. Moderate N'y wind. Fine and clear. Slight N'y sea and swell.

Bar. 30.066 (82° F.). Temp. 82°·7 F. dry, 76°·8 F. wet. Sea surface 82°·5 F.

0.15 Stopped making joint, as it cannot be finished before St. Louis and Fernando Noronha will be trying to speak each other through cable, as instructed by ship this morning.

0.40 Lead from testing room attached to both the St. Louis and Fernanda Noronha Ends, and ship spoke both places again.

1.0 Ship testing the St. Louis and Fernando Noronha Ends.

2.23 Tests on cables satisfactory. Fernando Noronha instructed to look out for signals from ship in one hour. If no signals from ship at that time, to watch for signals from St. Louis in two hours afterwards, *i.e.*, in three hours from this time.

**Slipping Final Bight.**

2.23 Commenced joint again between St. Louis and Fernando Noronha Ends.

3.33 Joint between St. Louis and Fernando Noronha Ends finished.



S.S. "SILVERTOWN."

Hour.

Slipping Final Bight—contd.

P.M.

SUNDAY, SEPTEMBER 11TH, 1892—contd.

4.0

Moderate NNW wind. Fine and bright, with light couds, Slight sea and swell.

4.20

Joint passed by testing room. Commenced final splice.

5.15

Splice between St. Louis and Fernando Noronha Ends completed; set about slipping bight.

5.38

Let go FINAL SPLICE of the Senegal—Feernando Noronha Section successfully.

Position of { Lat. 15° 55' 0 N.  
final splice { Long. 17° 9' 0 W.

SUMMARY OF CABLE LAID IN THE SENEGAL—FERNANDO NORONHA SECTION:—

F. NORONHA END.

N.M.

Shore-End	No. 2151	Sec. "3A"	1:500
Heavy Int.	" 2150	pt. Sec. "4B"	0:990
Light "	" 2149	" "4C"	1:490
Heavy Deep Sea	" 2148	" "1"	1:990
Light Deep Sea	" 2147	Sec. "5 pt. A"	145:662
" "	" "	" "6"	236:270
" "	" "	" "7 pt. A"	5:846
" "	" "	" "10 pt. A"	26:537
" "	" "	" "9A"	234:879
" "	" "	" "11A"	232:200
" "	" "	" "7A"	160:294
" "	" "	" "5A"	144:115
" "	" "	" "11B"	143:828
" "	" "	" "7 pt. B"	214:459
" "	" "	" "10 pt. B"	79:510
" "	" "	pt. Sec. "9B"	27:877

Laid 31st  
Aug. to  
9th Sept.,  
1892.

—> Final Splice, 11th Sept., 1892.

" "	" "	" "	3:804
Heavy Deep Sea	" 2148	" "1"	13:030
Light Int.	" 2149	" "4C"	15:990
Heavy "	" 2150	" "4B"	4:992
Heavy Int.	" 2061	Sec. "4A"	2:885
Shore-End	" 2060	" "4"	4:000

Laid 11th  
Sept., 1892.

Laid 15th  
to 16th  
May, 1892.

Laid 7th  
Oct., 1891.

I. R.  
Core.

ST. LOUIS END.

Grand Total .. 1702:148



S.S. "SILVERTOWN."

Hour. P.M.	At St. Louis and Steaming from St. Louis to Tenerife.
SUNDAY, SEPTEMBER 11 <sup>TH</sup> , 1892— <i>contd.</i>	
5.39	Set on for St. Louis.
8.0	Moderate NNW wind. Fine and clear. Hazy horizon Slight sea and swell. Bar. 30.120 (80° F.). Temp. 81° F. dry, 77° F. wet. Sea surface 80° F.
11.0	Let go anchor in 9 fms. off St. Louis. Government House bearing N 78° E, 2 N.M. distant.
MIDNT.	Fresh N'ly breeze. Fine and clear.
MONDAY, SEPTEMBER 12 <sup>TH</sup> , 1892.	
A.M. 6.35	Madoun, native chief, came alongside in a "pirogue" with letters from Mr. Crouch, at Cable Hut, and ship's mail. Mr. Crouch at St. Louis Hut and Mr. Schneider at Fernando Noronha Hut report tests on the Senegal—Fernando Noronha Section highly satisfactory. Messrs. R. E. Peake and E. March Webb, on examining the results of the tests sent on board by Mr. Crouch, report cable to be perfect.
8.0	Moderate NE breeze. Fine, but cloudy and hazy. Bar. 30.000 (82° F.). Temp. 82°·6 F. dry, 78°·3 F. wet. Sea surface 82°·8 F.
8.12	Madoun left for shore with letters and telegrams for Mr. Crouch. The following telegram was sent to Silvergray, London: — "Results of tests highly satisfactory. Now leaving for Tenerife. Benest. St. Louis, 12th."
9.20 P.M.	Weighed anchor and set on for Santa Cruz de Tenerife.
8.0	Fresh ENE breeze. Fine and clear. Slight head sea and swell. Bar. 29.985 (85° F.). Temp. 85° F. dry, 80°·3 F. wet. Sea surface 82°·2 F.



## EXPENDITURE TABLES.

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### DETAILS OF CABLE EXPENDED.

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### SUMMARY OF CABLE EXPENDED.

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# SOUTH AMERICAN CABLE COMPANY'S EXPEDITION, 1891-92. S.S. "SILVERTOWN."

## Details of Cable Expended.

Date.	Type.	Factory No.	Section.	Tank in Ship.	Laid.	Splices.	Damaged and abandoned.	Land-lines.	Returned to Works.	Remarks.
1891.										
June ...	H.I.	2061	4 A	...	N.M.	N.M. 0-010	N.M. ...	N.M. ...	N.M. ...	When loading ship in June, 1891.
October 7th	S.E.	2060	4	...	4-000	...	...	...	...	} St. Louis Shore-End, F. Noronha—Senegal Section. Corrected to 15.5.92.
" "	H.I.	2061	4 A	...	2-885	...	...	...	...	
1892.	"	2145	...	...	...	0-020	...	...	...	} Expended during the shipping of cable off Works.
" "	"	2150	...	...	...	0-010	...	...	...	
" "	L.I.	2144	...	...	...	0-020	...	...	...	
" "	"	2149	...	...	...	0-010	...	...	...	
" "	H.D.S.	2143	...	...	...	0-024	...	...	...	
March and April	"	2148	...	...	...	0-020	...	...	...	} Splice with 5 N.M. H.I., No. 2150, pt. Sec. "4 B" in after tank. Cut off St. Louis End. Kinky. Core preserved. Splice with H.I., 2061, on St. Louis End.
" "	L.D.S.	2083	...	...	...	0-028	0-004	...	...	
" "	"	2147	...	...	...	0-154	4-543	...	...	
May 9th ...	L.I.	2149	Pt. 4 C	M.	...	0-010	...	...	...	
" 15th ...	H.I.	2061	4 A	...	...	...	0-105	...	...	
" "	"	2150	Pt. 4 B	M.	...	0-008	...	...	...	} Spliced on to St. Louis End for Senegal—F. Noronha Section. Corrected to 11.9.92.
" "	"	"	"	"	4-992	...	...	...	...	
" 16th "	L.I.	2149	Pt. 4 C	"	15-990	...	...	...	...	
" "	H.D.S.	2148	Pt. 1	"	13-030	...	...	...	...	



SOUTH AMERICAN CABLE COMPANY'S EXPEDITION, 1891-92. S.S. "SILVERTOWN."  
*Details of Cable Expended—continued.*

Date.	Type.	Factory No.	Section.	Ship in Tank.	Laid.	Splices.	Damaged and abandoned.	Land-lines.	Returned to Works.	Remarks.
1892.	S.E.	2151	3 A	A.	N.M. 1 500	N.M. ...	N.M. ...	N.M. ...	N.M. ...	Laid from F. Noronha to Senegal.
	H.I.	2150	Pt. 4 B	"	0 990	...	...	...	...	
	L.I.	2149	Pt. 4 C	"	1 490	...	...	...	...	
	H.D.S.	2148	Pt. 1	"	1 990	...	...	...	...	
	L.D.S.	2147	5 pt. A	"	145 662	...	...	...	...	
	"	"	6	"	236 270	...	...	...	...	
	"	"	7 pt. A	"	5 846	...	...	...	...	
	"	"	10 pt. A	"	26 537	...	...	...	...	
	"	"	9 A	"	234 879	...	...	...	...	
	"	"	11 A	"	232 200	...	...	...	...	
	"	"	7 A	M.	160 294	...	...	...	...	
	"	"	5 A	"	144 115	...	...	...	...	
	"	"	11 B	"	143 828	...	...	...	...	
	"	"	7 pt. B	"	214 459	...	...	...	...	
	"	"	10 pt. B	"	79 510	...	...	...	...	
	"	"	Pt. 9 B	"	27 877	...	...	...	...	
	"	"	"	"	3 804	...	...	...	...	
August 31st to September 11th.										

September 11th	H.D.S.	2148	Pt. 1	"	...	3'960	...	...	Length by I.C. Tests cut off St. Louis End and abandoned.
"	L.D.S.	2147	9 B	"	...	0'012	...	...	Splice with St. Louis End, H.D.S. type, when hooked by grapnel.
"	"	"	"	"	...	0'010	...	...	Final Splice. Senegal—F. Noronha Section.
"	"	"	"	"	...	...	...	...	" " " " " " Cut off F. Noronha End.
...	"	"	"	"	...	...	...	21'407	Left in main tank on completion of Cables, 11.9.92.
...	"	"	5 pt. S.P.	"	...	...	...	80'064	" " " " " " " "
...	"	2083	9	F.	...	...	...	6'015	" fore " " " " "
...	Land-line cable	2177	...	Drums	...	...	6'500	...	3'75 N.M. Pernambuco, 2'5 N.M. F. Noronha, and 0'25 N.M. St. Louis.
GRAND TOTAL					2048'993	0'403	8'844	10'274	107'486

TOTAL MANUFACTURED = 2176·000 N.M.



# SOUTH AMERICAN CABLE COMPANY'S EXPEDITION, 1891-92. S.S. "SILVERTOWN."

## Summary of Expenditure of Cable.

Type.	Factory No.	Pernambuco - Fernando Noronha Section.	Senegal - Fernando Noronha Section.	Expended for Splices.	Damaged and abandoned.	Landlines at Pernambuco.	Landlines at Fernando Noronha.	Landlines at St. Louis.	Cable returned in S.S. "Silvertown."	Total manufactured.
I. R. Core	(Shore-End ...	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.
	2146 ...	8-483	...	0-008	0-009	...	...	...	...	8-500
	Heavy Intermediate ..	7-980	...	0-020	...	...	...	...	...	8-000
	Light " ...	15-709	...	0-028	0-052	0-332	0-379	...	...	16-500
	Heavy Deep Sea ...	17-986	...	0-039	0-156	2-538	0-281	...	...	21-000
I. R. Core	Light " ...	296-687	...	0-050	0-004	...	0-244	...	6-015	303-000
	2083 ...	346-845	...	0-145	0-221	2-870	0-904	...	6-015	357-0-0
	Total ...	...	4-000	...	...	...	...	...	...	4-000
	Shore-End ...	...	2-885	0-010	0-105	...	...	...	...	3-000
	Heavy Intermediate...	...	...	...	...	...	...	...	...	...
G. P. Core.	(Shore-End ...	...	1-500	...	...	...	...	...	...	1-500
	2151 ...	...	5-982	0-018	...	...	...	...	...	6-000
	Heavy Intermediate...	...	17-480	0-020	...	...	...	...	...	17-500
	Light " ...	...	15-020	0-020	3-960	...	...	...	...	19-000
	Heavy Deep Sea ...	...	1655-281	0-190	*4-558	...	...	...	101-471	1761-500
I. R. Core.	Light " ...	...	1702-148	0-258	8-623	...	...	...	101-471	1812-500
	2147 ...	...	...	...	...	3-750	2-500	0-250	...	6-500
	Total ...	346-845	1702-148	0-403	8-844	6-620	3-404	0-250	107-486	2176-000
	Landline Cable ...	...	...	...	...	...	...	...	...	...
	2177 ...	...	...	...	...	...	...	...	...	...
GRAND TOTAL		...	...	...	...	...	...	...	...	...

\* 4-543 N.M. of this expended as damaged by fire, &c., during the loading of ship.

TABLE SHEWING CABLE REMAINING  
ON BOARD S.S. "SILVERTOWN"  
AFTER COMPLETION  
OF THE  
SOUTH AMERICAN COMPANY'S CABLES.







## POSITION SHEETS.

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PERNAMBUCO—FERNANDO NORONHA  
SECTION.

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FERNANDO NORONHA—ST. LOUIS SECTION.

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POSITION SHEETS.

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PERNAMBUCO—FERNANDO NORONHA  
SECTION.

# PERNAMBUCO—FERNANDO NORONHA SECTION.

Commenced July 29th, 1892. Completed August 14th, 1892.

No.	Positions.		Courses (True).		Distance.		Cable paid out.		Factory No.	Slack paid out.		Slack %.		Average Depth.	Remarks.
	Lat. S.	Long. W.	Steered.	Made good.	Between Positions.	Total.	Between Positions.	Total.		Between Positions.	Total.	Between Positions.	Total.		
0	8 2° 32'	34 52° 2'	...	...	N.M. ...	N.M. ...	N.M. ...	N.M. ...	...	N.M. ...	N.M. ...	...	...	fms. ...	Cable Hut. Pernambuco.
1	8 2° 75'	34 51° 73'	Various	Various	0° 50'	0° 50'	0° 500'	0° 500'	S.E. 2146	0° 500'	Nil.	Nil.	Nil.	5½	S.S. "Silvertown," S 26° E.
2	8 2° 61'	34 51° 25'	"	"	0° 50'	1° 000'	0° 500'	1° 000'	"	"	"	"	"	6½	{ E house, Olinda, and N end Fort Buraco, 103° 42' Picao Lighthouse and N end Fort Buraco, 48° 42'.
3	8 2° 5'	34 50° 75'	"	"	0° 50'	1° 500'	0° 500'	1° 500'	"	"	"	"	"	6	{ E house, Olinda, and N end Fort Buraco, 88° 17'. Picao Lighthouse and N end Fort Buraco, 32° 12'.
4	8 2° 25'	34 50° 3'	"	"	0° 50'	2° 000'	0° 500'	2° 000'	"	"	"	"	"	7	{ E house, Olinda, and N end Fort Buraco, 75° 48'. Picao Lighthouse and N end Fort Buraco, 21° 38'.
5	8 2° 03'	34 49° 85'	"	"	0° 50'	2° 500'	0° 500'	2° 500'	"	"	"	"	"	7	{ E house, Olinda, and N end Fort Buraco, 60° 20'. Picao Lighthouse and N end Fort Buraco, 18° 32'.
6	8 1° 92'	34 49° 38'	"	"	0° 50'	3° 000'	0° 500'	3° 000'	"	"	"	"	"	7	{ E house, Olinda, and N end Fort Buraco, 47° 3'. Picao Lighthouse and N end Fort Buraco, 15° 34'.
8	8 1° 95'	34 48° 9'	"	"	0° 50'	3° 500'	0° 500'	3° 500'	"	"	"	"	"	8½	{ E house, Olinda, and N end Fort Buraco, 38° 35'. Picao Lighthouse and N end Fort Buraco, 13° 45'. Olinda Lighthouse and E turret Fort Buraco, 38° 50'.
8	8 2° 1'	34 48° 53'	"	"	0° 30'	3° 800'	0° 500'	3° 998'	"	0° 198	...	...	5.2	10	{ Splice Shore-End— Picao Lighthouse bearing S 69° W.

Laid by Lighter, September 29th, 1892.

9	8	2.1	34	48.5	Curve ...	0.050	3.850	0.054	4.052	"	0.004	0.202	...	5.2	...	On course N 67° E.
10	8	1.0	34	45.9	N 65° 41' E	2.850	6.700	2.938	6.990	"	0.088	0.290	12	4.3	12	Splice Shore - End and Heavy Intermediate. Olinda Lighthouse, N 89° W.
11	7	58.1	34	39.3	"	6.900	13.600	6.990	13.980	H.I.	2145	0.380	21	2.8	21	Splice Heavy Intermediate and Light Intermediate. Olinda Lighthouse N 89° W.
12	7	53.2	34	28.8	"	11.350	24.950	11.356	25.336	L.I.	2144	0.386	100	1.5	100	Changed course to N 47° E.
13	7	50.9	34	26.3	N 46° 20' E	3.200	28.150	3.634	28.970	"	"	0.434	400	2.9	400	Splice Light Intermediate and Heavy Deep Sea.
14	7	42.5	34	17.4	"	12.200	40.350	12.443	41.413	H.D.S.	2143	0.243	1400	2.6	1400	Observed position.
15	7	38.8	34	13.7	"	5.000	45.350	5.543	46.956	"	"	0.543	1500	3.5	1500	Splice Heavy Deep Sea and Light Deep Sea.
16	7	38.5	34	13.4	"	0.500	45.850	0.681	47.637	L.D.S.	2083	0.181	1500	3.9	1500	Changed course to N 55° E.
17	7	32.1	34	4.1	N 55° E...	11.000	56.850	11.462	59.099	"	"	0.462	1800	3.9	1800	" " N 30° E.
18	6	43.9	33	40.0	...	...	...	...	...	"	"	...	...	...	...	Position by stars.
19	6	41.1	33	38.7	N 30° E...	56.980	113.830	62.466	121.565	"	"	5.486	2387	6.8	2387	Changed course to N 36° E.
20	6	27.3	33	30.0	N 36° E...	...	...	...	...	"	"	...	...	...	...	Observed position.
21	6	17.0	33	22.6	"	28.980	142.810	33.108	154.673	"	"	4.128	2480	8.3	2480	Changed course to N 18½° E.
22	6	13.2	33	21.1	N 18° 30' E	...	...	...	159.287	"	"	...	...	...	...	Noon by observation. 12.8.92.
23	6	3.0	33	17.3	"	...	...	...	171.322	"	"	...	...	...	...	Splice Light Deep Sea and Light Deep Sea.
24	4	22.5	32	39.7	"	122.100	264.910	133.630	288.303	"	"	11.530	2400	8.8	2400	Changed course to N 5° W.
25	3	58.9	32	40.4	N 5° W...	...	...	...	...	"	"	...	...	...	...	Position by land : Fernando Noronha Peak N 60° E, distant 17.3 n.m.
26	3	54.35	32	42.2	"	28.310	293.220	32.146	320.449	"	"	3.836	1800	9.3	1800	Changed course to N 10° E. Peak N 76° E, distant 17.2 n.m.
27	3	50.35	32	41.9	N 10° E...	4.000	297.220	4.585	325.034	"	"	0.585	1400	9.3	1400	Changed course on curve to N'd and E'd.
28	3	49.55	32	41.75	Curve ...	0.800	298.020	0.868	325.902	"	"	0.068	1400	9.3	1400	Changed course to the E'd. Peak about S 87° E, distant 16.3 n.m.
29	3	48.50	32	40.70	"	1.500	299.520	1.698	327.600	"	"	0.198	1300	9.4	1300	Changed course to N 77° E. Peak S 83½° E, 15.2 n.m. distant.
30	3	46.7	32	31.5	N 77° E...	9.330	308.850	9.498	337.098	"	"	0.168	1300	9.1	1300	Changed course on curve to S'd and E'd. Peak S 59½° E, 6.95 n.m. distant.
31	3	46.7	32	31.05	Curve ...	0.450	309.300	0.504	337.602	"	"	0.054	1200	9.1	1200	Changed course to S 58° E. Peak S 58° E, 6.35 n.m. distant.

PERNAMBUCO—FERNANDO NORONHA SECTION—continued.  
Commenced July 29th, 1892. Completed August 14th, 1892—continued.

No.	Positions.		Courses (True).		Distance.		Cable paid out.		Factory No.		Slack paid out.		Slack %		Average Depth.	Remarks.
	Lat. S.	Long. W.	Steered.	Made good.	Between Positions.	Total.	Between Positions.	Total.	Between Positions.	Total.	Between Positions.	Total.	Between Positions.	Total.		
32	3 47.8	32 28.6	S 58° E ...	Various...	N.M. ...	N.M. ...	N.M. ...	N.M. ...	L.D.S. 2083	N.M. ...	N.M. ...	N.M. ...	...	...	fms. 650	Buoy and Splice Light Deep Sea and Light Deep Sea.
33	3 48.3	32 27.3	Various...	"	4.250	313.550	6.041	343.643	" "	1.791	30.093	42.1	9.6	9.6	233	FINAL SPLICE Light Deep Sea and Light Intermediate. Peak S 43½° E, 2.6 N.M. distant.
34	3 48.55	32 26.9	S 52° E ...	S 60° E ...	0.530	314.080	0.719	344.362	L.I. 2144	0.189	30.282	35.6	9.6	9.6	200	Splice Light Intermediate and Heavy Intermediate. Peak S 41½° E, 2.15 N.M. distant.
35	3 49.0	32 26.05	S 53½° E	S 63° E ...	0.980	315.060	0.990	345.352	H.I. 2145	0.010	30.292	1.0	9.6	9.6	26	Splice Heavy Intermediate and Shore-End. Peak S 25½° E, 1.32 N.M. distant.
36	3 49.28	32 25.4	"	"	0.660	315.720	0.693	346.045	S.E. 2146	0.033	30.325	5.0	9.6	9.6	18	Changed course on curve. Peak S 2° W, 0.88 N.M. distant.
37	3 49.75	32 25.35	Curve ...	Curve ...	0.436	316.156	0.436	346.481	" "	...	30.325	...	9.6	9.6	7	Ship's anchorage. Peak S 14½° W., Cable House S 44½° E.
38	50.0	32 25.20	...	...	0.320	316.476	0.364	346.845	" "	...	30.369	...	...	...	...	Cable Hut at Fernando Noronha.

POSITION SHEETS.

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FERNANDO NORONHA—ST. LOUIS SECTION.

# FERNANDO NORONHA—SENEGAL SECTION.

Commenced August 31st, 1892.

Completed September 11th, 1892.

No.	Positions.		Courses (True).		Distance.		Cable paid out.		Factory No.	Slack paid out.		Slack %.		Average Depth.	Remarks.
	Lat. S.	Long. W.	Steered.	Made good.	Between Positions.	Total.	Between Positions.	Total.		Between Positions.	Total.	Between Positions.	Total.		
0	3 50.0	32 25.20	...	...	N.M.	N.M.	N.M.	N.M.	...	N.M.	N.M.	...	...	...	Fernando Noronha Hut.
1	3 49.68	32 25.52	...	...	0.520	0.520	0.523	0.523	...	0.003	0.003	...	...	9½	{ Ship's anchorage. Changed course to N 5° W. Peak S 3½° E, dist. 0.52 N.M. Peak and Cable House 43° 42'.
2	3 48.73	32 25.68	N 5° W	N 5° W	0.977	1.497	0.977	1.500	S.E. 2151	...	0.003	...	...	30	{ Splice Shore-End and Heavy Intermediate. Peak S 5° E, dist. 1.5 N.M.
3	3 47.7	32 25.70	"	"	0.900	2.397	0.990	2.490	H.I. 2150	0.090	0.093	10.0	3.9	50	{ Splice Heavy Intermediate and Light Intermediate. Changed course to N 38° E.
4	3 46.6	32 24.9	N 38° E	N 36° 36' E	...	...	1.490	3.980	L.I. 2149	...	...	...	...	230	{ Splice Light Intermediate and Heavy Deep Sea.
5	3 45.2	32 23.8	"	"	...	...	1.990	5.970	H.D.S. 2148	...	...	...	...	900	{ Splice Heavy Deep Sea and Light Deep Sea.
6	2 40.3	31 35.6	"	"	83.940	86.337	93.863	99.833	L.D.S. 2147	9.923	13.496	11.8	15.6	2400	{ Noon by observations, 1.9.92. Changed course to N 39° E.
7	2 2.9	31 2.9	N 39° E	N 39° 36½' E	...	...	...	151.632	"	...	...	...	...	...	{ Splice Light Deep Sea and Light Deep Sea, 7.38 p.m. 1.9.92.
8	1 5.6	30 17.2	"	"	122.940	209.277	133.200	233.033	"	10.260	23.756	8.3	11.3	2400	{ Position by stars, 6 a.m. 2.9.92.
9	0 31.2	29 46.6	"	"	N 41° 39' E	46.030	255.307	284.007	"	4.944	28.700	10.7	11.2	2280	{ Noon by observations, 2.9.92.
10	0 3.0	29 16.6	"	"	N 41° 15' E	45.490	300.797	46.532	330.539	"	...	...	...	...	Changed course to N 74° E, 6.12 p.m. 2.9.92.
11	0 16.4	28 27.6	N 74° E	N 74° 43' E	50.840	351.637	54.873	385.412	"	4.033	33.775	5.26	9.7	1900	{ Changed course to N 35° E, 1.20 a.m. 3.9.92.

12	0 18.1	28 25.3	N 35° E	N 35° 58' E	...	...	...	387.902	"	"	...	...	...	1900	Splice Light Deep Sea and Light Deep Sea,
13	0 22.7	28 23.0	"	"	...	...	...	393.748	"	"	...	...	...	2000	"
14	0 43.0	28 8.0	"	"	...	...	...	420.285	"	"	...	...	...	1900	"
15	0 44.7	28 6.7	"	"	...	...	...	422.949	"	"	...	...	...	1900	Position by stars, 6 a.m. 3.9.92.
16	1 22.0	27 40.0	"	"	81.050	432.687	88.350	473.762	"	"	7.300	41.075	9.0	1950	Noon by observations, 3.9.92.
17	3 40.4	26 6.6	"	N 34° 7' E	...	...	...	655.164	"	"	...	...	...	2250	{ Splice Light Deep Sea and Light Deep Sea, 10.35 a.m. 4.9.92.
18	3 48.3	26 0.8	"	"	176.700	609.387	192.799	666.561	"	"	16.099	57.174	9.1	2300	Noon by observations, 4.9.92.
19	6 11.1	24 8.8	"	N 38° E	181.220	790.607	194.738	861.299	"	"	13.518	70.692	7.4	2300	Noon by dead reckoning, 5.9.92.
20	6 28.6	23 54.5	"	N 39° 43' E	...	...	...	887.364	"	"	...	...	...	2300	{ Splice Light Deep Sea and Light Deep Sea. Changed tanks. After to Main.
21	6 37.3	23 46.9	"	N 33° 25' E	34.060	824.667	42.215	903.514	"	"	8.155	78.847	23.9	2300	{ Observed position. Changed course to N 34° E, 6.30 p.m. 5.9.92.
22	8 7.2	22 47.1	N 34° E	N 36° 30' E	107.700	932.367	118.444	1021.058	"	"	10.744	89.591	9.9	2600	Observed position, 8.52 a.m. 6.9.92.
23	8 26.7	22 32.3	"	"	...	...	...	1047.658	"	"	...	...	...	2450	{ Splice Light Deep Sea and Light Deep Sea, 11.44 a.m. 6.9.92.
24	8 27.4	22 32.0	"	"	25.130	957.497	26.570	1048.528	"	"	1.440	91.031	5.7	2450	Noon by observations, 6.9.92.
25	9 12.9	22 1.0	"	N 33° 37' E	...	...	59.652	1108.180	"	"	...	...	...	2450	Observed position, 6.30 p.m. 6.9.92.
26	10 16.7	21 18.7	"	"	...	...	...	1191.773	"	"	...	...	...	2750	{ Splice Light Deep Sea and Light Deep Sea, 4.4 a.m. 7.9.92.
27	10 26.1	21 12.7	"	"	...	...	96.226	1204.406	"	"	...	...	...	2750	Observed position, 5.30 a.m. 7.9.92.
28	11 5.2	20 45.5	"	"	189.510	1147.007	52.019	1256.425	"	"	18.387	109.418	9.7	2730	Noon by observations, 7.9.92.
29	12 7.1	20 6.4	"	N 32° 15' E	...	...	...	1335.601	"	"	...	...	...	2650	{ Splice Light Deep Sea and Light Deep Sea, 9.7 p.m. 7.9.92.
30	13 39.1	19 6.0	"	"	181.970	1328.977	200.186	1456.611	"	"	18.216	127.634	10.0	2150	{ Observed noon, 8.9.92. Changed course to N 35° E.



# FERNANDO NORONHA—SENEGAL SECTION—continued.

Commenced August 31st, 1892.

Completed September 11th, 1892—continued.

No.	Positions.		Courses (True).		Distances.		Cable paid out.		Factory No.	Slack paid out.		Slack %.		Average Depth.	Remarks.
	Lat. S.	Long. W.	Steered.	Made good.	Between Positions.	Total.	Between Positions.	Total.		Between Positions.	Total.	Between Positions.	Total.		
31	14 46.3	18 16.2	N 35° E	N 35° 5' E	...	...	...	1550.060	L.D.S. 2147	...	...	...	...	1450	{ Splice Light Deep Sea and Light Deep Sea, 10.20 p.m. 8.9.92.
32	15 32.7	17 43.6	"	"	...	...	...	1610.865	"	16.852	143.986	11 6	9.8	{ 950	Observed position, 7 a.m. 9.9.92.
33	15 33.5	17 43.0	"	"	139.840	1468.817	156.192	1612.803	"	...	...	...	...	900	Changed course to N 56½° E, 7.18 a.m. 9.9.92.
34	15 41.2	17 29.6	N 56½° E	N 39° 5' E	...	...	...	1629.570	"	...	...	...	...	790	{ Splice Light Deep Sea and Light Deep Sea, 9.36 a.m. 9.9.92.
35	15 47.4	17 18.9	"	"	27.055	1495.872	29.819	1642.622	"	2.764	146.750	10.2	9.8	850	Noon by observations, 9.9.92.
36	15 50.62	17 11.03	"	"	8.200	1504.072	9.069	1651.691	"	0.869	147.619	10.6	9.8	700	{ Changed course to Buoy 20 R, bearing N 24° E, 0.53 p.m. 9.9.92.
36a	15 50.60	17 10.20	"	"	...	...	...	...	"	...	...	...	...	...	...
37	15 55.0	17 9.0	N 24° E	N 24° E	4.800	1508.872	5.756	1657.447	"	0.956	148.575	19.9	9.8	684	{ At Buoy. Final splice Light Deep Sea and Light Deep Sea. Changed course.
37a	15 55.0	17 8.2	"	"	...	...	...	...	"	...	...	...	...	...	...
38	15 56.75	17 6.3	N 46° E	N 46° E	2.500	1511.372	3.804	1661.251	"	1.304	149.879	52.1	9.9	680	{ Changed course. Splice Light Deep Sea 2147 and Heavy Deep Sea 2148.
38a	15 56.70	17 7.1	"	"	...	...	...	...	"	...	...	...	...	...	...
39	16 1.2	16 57.2	N 58° E	N 61½° E	10.950	1522.822	13.030	1674.281	H.D.S. 2148	2.080	151.959	19.0	9.9	220	{ Splice Heavy Deep Sea 2148 and Light Intermediate 2149.
40	16 2.5	16 54.7	"	"	2.750	1525.072	3.849	1678.130	L.I. 2149	1.099	153.058	39.9	10.0	70	Changed course.
41	16 3.0	16 42.6	N 85° E	N 87° E	11.750	1536.822	12.141	1690.271	"	0.391	153.449	3.3	9.9	30	{ Splice Light Intermediate 2149 and High Intermediate 2150.
42	16 3.1	16 38.1	"	"	4.300	1541.122	4.596	1694.867	H.I. 2150	0.296	153.745	6.8	9.9	...	Curve.

43	16	3·1	16 37·6	Curve.	Curve.	0·396 1541·518	0·396 1695·263	„	„	...	153·745	...	9·9	21	{ Splice Heavy Intermediate 2150 and Heavy Intermediate 2061.
44	16	3·1	16 37·7	...	...	...	...	„	„	...	...	...	...	21	Cable buoyed 7.10.91.
45	16	3·0	16 34·6	...	...	2·900 1544·418	2·885 1698·148	H.I.	2061	...	153·730	...	9·9	15	{ Splice Heavy Intermediate 2061 and Shore-End 2060.
46	16	3·0	16 33·8	S 89° E	S 89° E	0·800 1545·218	0·859 1699·007	S.E.	2060	0·059	153·789	7·3	9·9	12	Changed course.
47	16	1·75	16 32·2	S 47° E	S 53° E	1·800 1547·018	1·856 1700·863	„	„	0·056	153·845	3·1	9·9	9	„
48	16	1·6	16 31·5	S 76° E	S 80° E	0·800 1547·818	0·836 1701·699	„	„	0·036	153·881	4·5	9·9	6	Ship's anchorage.
49	16	1·6	16 31·0	East.	East.	0·400 1548·218	0·449 1702·148	„	„	0·049	153·930	12·2	9·9	...	Cable House, St. Louis, Senegal.



ELECTRICAL REPORT

ON THE

SOUTH AMERICAN CABLES  
EXPEDITION.



# INDEX TO ELECTRICAL REPORT.

---

	PAGE
General Electrical Report .. .. .	4
Summary of Events during Voyage .. .. .	27
Loading of S.S. "Silvertown" ... .. .	34
 PERNAMBUCO—FERNANDO NORONHA CABLE .. .. .	 36
Electrical Particulars and Specification .. .. .	37
75° Values of Completed Sections (Factory) .. .. .	38
Final Tests on       "       "       " .. .. .	39
75° Values of Shipped Sections .. .. .	40
Final Tests on       "       " (Factory) .. .. .	41
Lengths, Types, and 75° Values of Pernambuco—Fernando Noronha Laid and Completed Section .. .. .	 42
Table of Depths, Temperatures, and Corresponding Cable Lengths (Table A) .. .. .	 43
Details of Sub-division of the Laid and Completed Cable (Table B) .. .. .	 44
Final Tests on the Laid and Completed Cable—	
Table A. First Tests after Completion .. .. .	45
Table B. Final Guarantee Tests .. .. .	46
Comparison of Tests on the Laid and Completed Section .. .. .	47
Expenditure Table .. .. .	48

*Index to Electrical Report.*

---

	PAGE
FERNANDO NORONHA—ST. LOUIS SECTION .. ..	51
Electrical Particulars and Specification.. ..	52
75° Values of Completed Sections (Factory) .. ..	53
Final Tests on     ,,         ,,         ,,     .. ..	54
75° Values of Shipped Sections         .. ..	55
Final Tests on     ,,         ,,     (Factory) .. ..	56
Lengths, Types, and 75° Values of Fernando Noronha—St. Louis Laid and Completed Section .. ..	57
Table of Depths, Temperatures, and Corresponding Cable Lengths (Table A) .. ..	58
Details of Sub-division of the Laid and Completed Cable (Table B) .. ..	59
Final Tests on the Laid and Completed Cable—	
Table A. First Tests after Completion .. ..	60
Table B. Final Guarantee Tests .. ..	61
Comparison of Tests on the Laid and Completed Cable .. ..	62
Expenditure Table .. ..	63
Underground Cables:—	
Lengths, 75° Values, and Tests .. ..	67
Notes on Fernando Noronha .. ..	74

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GENERAL ELECTRICAL REPORT.

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# SOUTH AMERICAN CABLES, 1892.

## GENERAL ELECTRICAL REPORT.

SILVERTOWN,

M. H. GRAY, ESQ.,

December, 1892.

*Engineer-in-Chief.*

DEAR SIR,

I herewith beg to hand you the Electrical Report on the South American cables. Attached to the following general observations you will find the usual Tables, which will give you all information as to the electrical condition of the cable from its manufacture up to the termination of the five days' guarantee tests after submersion.

For convenient reference to these Tables I append an Index, and for the clearer comprehension of our operations—though strictly speaking not a matter pertaining to the Electrical Department—you will find attached a “Summary of Events.”

INDIA  
RUBBER  
UNDER-  
GROUND  
CABLES.

It is to be regretted that an unfavourable report must be made as to the electrical condition of the india-rubber cable coiled on drums and taken out in the “Silvertown” for land-line purposes. It is difficult to account for the very defective condition of this cable, seeing that the core was the same as that manufactured for the Pernambuco—Fernando Noronha Section, and considering that the cable received no mechanical injury, nor was it exposed to any dangerous extent to such climatic variations as may possibly be prejudicial even to india-rubber core.

All the drums (3) landed at Pernambuco were found to be very defective electrically, and the faults appear to

UNDER-  
GROUND  
CABLES—  
*contd.*

have been distributed throughout the whole length on each drum. When the cables were cut during the trench work—a portion of each drum being laid in the trench and the remainder of the cable still coiled on the drums—the presence of faults on both sides of the cuts was evident.

Consequently, in order to provide at least one sound line at Pernambuco, a length of new cable, Heavy Deep Sea type, was landed from the “Silvertown.” This proved entirely satisfactory, as you will notice in the Tables which give details of underground lines. This line is called “No. 4.”

There seems to be some doubt as to the correct length of underground cable at Pernambuco. The various actual measurements do not appear to agree, and the electrical values obtained certainly point to a longer length having been laid than that given by the supposed actual measurement of the trench.

At Fernando Noronha five drums were landed. Two of these were not used, and when we left the island they were buried in the sand close to the Cable House. Of the three drums made use of, two were faulty, but the third gave a very high insulation. This line is called No. “4.” As the drummed cable had proved so unsatisfactory, some picked-up cable, composed of pieces of Heavy Deep Sea, Light Deep Sea, and Light Intermediate types, India Rubber Core, was landed from the “Silvertown.” Two thoroughly satisfactory lines (Nos. “1” and “2”) were made up from these pieces. It was intended to work the sections to Pernambuco and St. Louis on these two lines, the line of drummed cable (No. “4”), which was sound, being kept as a spare line, while the two faulty lines of drummed cable were to be used as earth wires.

At St. Louis one drum of india-rubber cable was landed. This was cut into three lengths, giving three new lines between the old Cable House and the offices, lately acquired, close to. This cable, though giving a very low insulation, showed no actual faultiness.

UNDER-  
GROUND  
CABLES—  
*contd.*

Owing to want of time we were unable to ascertain the nature of the faults; nor, indeed, was there any opportunity afforded for localising and cutting them out, since the trench work had to be completed in a hurry. But should, as will probably be found necessary, the defective lines be replaced by sound cable, it would be of great interest to ascertain the nature, if not the cause, of a deterioration so rapid and unexpected to cable which, at the works, both before and after being coiled on drums, gave a thoroughly satisfactory insulation.

[Complete details of these cables will be found among the Tables attached to this Report.]

PERNAMBUCO  
—FERNANDO  
NORONHA  
SECTION.

—  
VARIATION  
BETWEEN  
COILS.

The variation in capacity and insulation between the various coils of India Rubber core as compared with this variation in the case of the Gutta Percha core would seem at first sight considerable; but when the difficulty of maintaining a homogeneous mixture and the far more elaborate system necessary to the preparation of india-rubber for Submarine Cables are considered, the difference between the maximum and minimum values cannot be looked upon as excessive. The following figures are taken from all the coils tested at 75° Fhr., the highest and lowest values in each sheet (eight sheets) being selected:—

INDUCTIVE CAPACITY PER KNOT AT 75° FHR.	DIELECTRIC RESISTANCE PER KNOT AT 75° FHR.
Mean highest=0.3736 mcfds.	Mean highest=5113.0 megohms.
„ lowest =0.3543 „	„ lowest =3047.0 „

FALL IN  
INSULATION.

A continuous and steady fall in the insulation of the India Rubber cable destined to connect Pernambuco with the Island of Fernando Noronha was observed during the voyage. This decrease of the dielectric resistance was first observed shortly after leaving Dakar on our route to Fernando Noronha, and the downward direction continued up to the date of submersion. Long, careful, and repeated tests made by Messrs. Clark Forde & Taylor's engineers, and by our electricians, left nothing to be desired as

UNDER-  
GROUND  
CABLES—  
*contd.*

FALL IN  
INSULATION  
—*contd.*

regards the steadiness of the readings or the regularity of the electrification. On no occasion did anything occur which could give rise to the least doubt or suspicion as to the condition of the cable. On the next page you will find an abstract from our Cable Test Books showing the insulation of the cable from time to time from the core (tests at 75° Fhr.) up to the final tests on board prior to submersion.

# General Electrical Report.

PERNAMBUCO  
— FERNANDO  
NORONHA  
SECTION.

FALL IN INSU-  
LATION—*con.*

## ABSTRACT OF TESTS.

Date.	Place of Testing.	D.R. per N.M.		Temps.		Where Tested.
		Obsrd. megohm.	Red. to 75° F. by calc. temp.megs.	Obsrd. Fhr.	Calc. Fhr.	
1892.	As core at 75°	3982	3982	75°	75°	At works.
Feb. 15-25	Completed Cable Finals.	9347	4437	49°	53°	„
Apl. 23-24	Shipped Cable Finals.	9847	4223	49°·5	50°	„
May 5	Cable on board.	8606	4299	58°	54°·5	At sea.
„ 12	„	6522	4271	65°	62°·5	At Dakar.
„ 19	„	5949	4240	70°	65°	At sea.
„ 25	„	4224	3816	74°	72°	At Fernando Noronha.
„ 29	„	3265	3435	75°	76°·5	At Pernambuco.
June 2	„	2694	3085	76°	79°	„
„ 12	„	2438	3143	77°	82°·5	At Bahia.
„ 18	„	2263	3018	77°	83°·5	„
„ 24	„	2036	2857	77°	85°	At sea.
July 1	„	2099	2896	78°	84°·5	At Bahia.
„ 9	„	2211	2949	77°	83°·5	„
„ 18	„	2152	2870	76°	83°·5	At sea.
„ 21	„	2153	2826	75°	83°	„
„ 27	„	1992	2702	75°·5	84°	At Pernambuco.
Aug. 3	„	1926	2657	78°	84°·5	At Fernando Noronha.
„ 9	„	1844	2501	79°	84°	At Pernambuco.
„ 11	Finals on board prior to sub- mersion.	1887	2559	79°	84°	„



PERNAMBUCO  
—FERNANDO  
NORONHA  
SECTION—  
*contd.*

FALL IN IN-  
SULATION—  
*contd.*

You will observe that the first noticeable fall in insulation occurred between May 19th and 29th, when the temperature rose to 75° F. On the latter of the two dates mentioned, the observed and calculated temperatures very closely agree, being respectively 75° and 76°·5, so the accuracy of the temperature on this occasion would not seem to be in doubt. The dielectric resistance of the core at 75° per N.M. was 3982 megohms. In the test under notice the dielectric resistance per N.M. reduced to 75°, adopting the calculated temperature 76°·5, is only 3435 megohms. At the observed temperature 75°, the dielectric resistance per N.M. is on the same occasion 3265 megohms.

The fall in insulation continued in a marked manner, as you will see from the foregoing Table, up to the date of submersion. From the date of the completion of this section, the insulation varied from time to time, up to September 16th, when the final guarantee test was taken; during this period a further fall in the insulation was noticeable, but not so marked as was the case prior to submersion.

The Table given on the opposite page, showing the insulation of the cable at different periods during its submersion, will afford some confirmation as to the absence of any indication of a weakness which could account for the fall of dielectric resistance. During the paying out no unsteadiness in the insulation readings was noticed; in fact, nothing could have been more satisfactory than the behaviour of the cable under the continued stress of 108 Leclanché cells, this being the battery power employed in all tests.

TESTS TAKEN DURING THE LAYING OF THE PERNAMBUCO—  
FERNANDO NORONHA SECTION.

75° values of completed Section.  
C.R. per N.M. ... = 5·397 ohms.  
D.R. " ... = 3892 mgs.  
Ind. Cap. " ... = 0·3630 mids.

Date.	Time.	Length, n.m.		C.R. observed.	D.R. observed per n.m.						Depth, fathoms.	Temperature.		Remarks.
		Paid out.	Total in Circuit.		Per n.m. Ship Test.	Ship's Tests.			Shore Tests.			Bottom observed from soundings.	Cable calculated.	
						1st min.	5th min.	30th min.	1st min.	5th min.				
1892.				ohms.	megohms.	megohms.	megohms.	megohms.	megohms.					
Aug. 11 ...	Noon ...	6·990	349·924	5·5036	1116·0	2153·0	4466·0	2121·0	3716·0	14	76°·3	84°	While paying out. Splice between Shore-End and Heavy Intermediate.	
"	Midnt. ...	78·129	349·924	5·4640	1355·0	2328·0	4567·0	2502·0	4559·0	2100	34°	81°	While paying out.	
Aug. 12 ...	Noon ...	160·167	349·924	5·3088	1484·0	3210·0	7031·0	3321·0	6802·0	2485	33°·5	67°	While paying out.	
"	Midnt. ...	245·341	349·924	5·1840	2513·0	4543·0	10738·0	4314·0	8643·0	2520	33°·5	55°·75	While paying out.	
Aug. 13 ...	Noon ...	330·324	349·924	5·0612	3263·0	7771·0	23623·0	7733·0	21999·0	1300	36°·0	44°·25	While paying out.	
"	Midnt. ...	342·667	349·924	5·0125	6532·0	19597·0	...	...	...	750	38°·2	40°	Paying out while picking up on approaching Splice with Light Intermediate on Fernando Noronha End.	
Aug. 14 ...	p.m. 10.0 ...	346·845	346·845	Shore test 4·993	Fernando 7877·0	Noronha 23631·0	Hut. 58604·0	...	...	...	mean.	39°·5	Test taken by Mr. R. E. Peake from Fernando Noronha Hut (preliminary test) after the completion of section.	

Paying out while picking up  
on approaching splice with  
Light Intermediate on  
Fernando Noronha End.

Test taken by Mr. R. E. Peake  
from Fernando Noronha  
Hut (preliminary test) after  
the completion of section.

# General Electrical Report.

PERNAMBUCO  
—FERNANDO  
NORONHA  
SECTION—  
*contd.*

The following tests, taken at Pernambuco and Fernando Noronha, will shew the behaviour of the cable during the month subsequent to submersion.

## AT PERNAMBUCO.

AUG. 19TH, 1892.			AUG. 26TH, 1892.		
Dielectric resistance per knot.			Dielectric resistance per knot.		
Megohms.			Megohms.		
Min.	Zinc Current.	Carbon Current.	Min.	Zinc Current.	Carbon Current.
1	7920·0	8259·0	1	8246·0	8169·0
5	22776·0	24206·0	5	24357·0	23266·0
10	32172·0	35379·0	10	37714·0	41023·0
15	40358·0	44224·0	15	46303·0	42514·0
20	46007·0	47909·0	20	54378·0	52545·0
30	52882·0	58965·0	30	59956·0	59956·0

## AT FERNANDO NORONHA.

SEPT. 11TH, 1892.			SEPT. 16TH, 1892.		
Dielectric resistance per knot.			Dielectric resistance per knot.		
Megohms.			Megohms.		
Min.	Zinc Current.	Carbon Current.	Min.	Zinc Current.	Carbon Current.
1	7744·0	7692·0	1	7558·0	7669·0
5	23950·0	22120·0	5	22400·0	24010·0
10	33670·0	31820·0	10	32508·0	35664·0
15	41480·0	39370·0	15	40270·0	44256·0
20	48908·0	45550·0	20	47096·0	51738·0
30	59570·0	56660·0	30	56515·0	60220·0

The observations on Sept. 16th are from the Final Guarantee Tests taken by Mr. Bent at the Fernando Noronha Hut.

On opening out the India Rubber Heavy Intermediate (laid at St. Louis in 1891) we found, when splicing on the Gutta Percha Heavy Intermediate on this present expedition (May, 1892), that the copper wires in the india-rubber core had turned black and brown in several places, not only near the end, but also at intervals up to 100 yards back. The same change was noticed in the conductor of the india-rubber cable laid at Fernando Noronha in the

DISCOLORA-  
TION OF CON-  
DUCTOR.

PERNAMBUCO  
—FERNANDO  
NORONHA  
SECTION—  
*contd.*

DISCOLORA-  
TION OF CON-  
DUCTOR—  
*contd.*

INDIA  
RUBBER  
JOINTS.

Heavy Deep Sea type, and was also observed in some small pieces of this cable which had been cut off ends, &c. This occurrence gave rise to certain fears lest some chemical action had been set up which might have affected the conductor. However, no further trace of this discoloration was noticed during the work, either at Pernambuco, or in our subsequent operations off Fernando Noronha, the conductor in every instance being perfectly clean and bright.

A question of considerable importance is originated by the very long time required to make a rubber joint either by the method of steam curing or by the use of the compound mixture: three hours in both cases are necessary to thoroughly cure the joint. In the steam curing further difficulties are encountered: it occasionally happens that the requisite steam pressure is not immediately available, and it is often found impossible to cure the joint in the position most convenient for the general work, as it is necessary that the curing stove should be placed in the vicinity of some steam pipe.

In view of the success attending the joint between the India Rubber and Gutta Percha Heavy Intermediate off St. Louis, it has been suggested that no reason exists why, with due care, the joint between two india-rubber cores should not be made with gutta-percha. Where no anchorage is obtainable, and when, owing to threatening weather, the dangerous character of the bottom, or other reasons, the saving of time becomes an important object, such a method would offer considerable advantage as opposed to the old system. The only argument which can be brought against the introduction of this idea is the fact that only experienced jointers can be relied upon to make a thoroughly satisfactory joint between the two materials.

As an instance of circumstances where a more rapid method than that usually practised would have been of

PERNAMBUCO  
—FERNANDO  
NORONHA  
SECTION—  
*contd.*

INDIA  
RUBBER  
JOINTS—  
*contd.*

FERNANDO  
NORONHA—  
PERNAMBUCO  
SECTION.

REGULARITY  
OF COILS.

great value, I may cite the occasion of the completion of the Pernambuco—Fernando Noronha Section. On picking up the buoyed Heavy Deep Sea on the Fernando End, preparatory to making the final splice with the Light Deep Sea we had been paying out, we found that the cable towards Fernando had been seriously damaged, electrically as well as mechanically, by the exceedingly bad bottom,\* and that it was necessary to pick up and cut out the damaged portion. We were consequently obliged to joint and splice again the Light Deep Sea, laid from Pernambuco, with the cable on board, so as to pay out whilst recovering the damaged cable shorewards. Fortunately the weather remained calm, but had we experienced the heavy squalls, the strong winds, or the rough seas, so frequently encountered in the neighbourhood of the island, the delay of six hours in making the two joints might have been attended by serious consequences.

There are fortunately but few remarks to make on the behaviour of the gutta-percha core used in the long section between Fernando Noronha and St. Louis, Senegal. It is probable that no better core has ever been manufactured at the works, and the very great regularity, both as regards capacity and insulation of the coils, is a proof that, notwithstanding the many different varieties of gutta-percha introduced to European markets, and which manufacturers are compelled to make use of, this heterogeneous material can be made to fulfil the severe conditions as regards the maximum and minimum limits of capacity and insulation which of late years have been so generally imposed upon contractors. The

\* NOTE.—It was ascertained that despite our numerous soundings the Fernando End had fouled a mass of loose and sharp-edged boulders which had accumulated just at the position chosen for buoying. Further soundings taken at close intervals in the neighbourhood and along the line of cable gave no evidence of a recurrence of this peculiar feature.

# General Electrical Report.

FERNANDO  
NORONHA—  
PERNAMBUCO  
SECTION—  
contd.

REGULARITY  
OF COILS—  
contd.

following figures will give some idea of the small variation between the coils:—

Inductive capacity per knot at 75° F.	Dielectric resistance per knot at 75° F.
Mean highest = 0.3625 mcfd.	Mean highest = 831.0 megohms.
„ lowest = 0.3531 „	„ lowest = 669.0 „

These averages were taken from all the coils tested at 75° F., the highest and lowest on each sheet (twenty-five sheets) being selected.

FERNANDO  
NORONHA—  
St. LOUIS  
SECTION.

ACCIDENT TO  
CABLE.

No incident occurred either in the manufacture of the gutta-percha cable or on the voyage out, or in our long delay on the Brazilian Coast, or during the laying of the Fernando—St. Louis Section, worthy of any especial reference. One exception, however, to the otherwise satisfactory history of this cable is to be recorded. Whilst shipping cable off the works a fire occurred on board the “Silvertown,” causing some damage to a portion of the section coiled at the bottom of the main tank. The damaged places were cut out (see Expenditure Table) and the section spliced up and coiled down again in the same tank. It was not found necessary to make use of any portion of this damaged section on the South American Cable Expedition;\* but I may mention that during the whole of the voyage, out and home, it gave a higher insulation than any other portion of the cable on board, and the steadiness of all readings on it left nothing to be desired.

STEADINESS  
OF TESTS.

The absolute steadiness of all tests taken on board during the laying of the Fernando Noronha—St. Louis Section is worthy of remark. Notwithstanding the long length in circuit and the large quantity of cable coiled in the tanks, on no occasion was it found necessary to

\* NOTE.—For further confirmation of the high insulation of this section (Section “5,” Light Deep Sea), see Report on the Repairs, 1893, to the South American cable.



FERNANDO  
NORONHA—  
ST. LOUIS  
SECTION—  
*contd.*

STEADINESS  
OF TESTS—  
*contd.*

INSULATION  
OF CABLE  
DURING  
LAYING.

interpose any resistance between the testing apparatus and the cable, a method so frequently made use of, in cases of heavy rolling, to deaden the throws produced by induction. It is no exaggeration to say that tests made in a factory could scarcely have shewn greater steadiness. The especial care taken with regard to the earths on board no doubt assisted to assure the very satisfactory conditions under which the work was prosecuted.

The Table found on the opposite page shows the copper resistance and insulation of cable at every period of twelve hours during the laying. At these periods the continuity tests were interrupted for the purpose of obtaining a copper resistance test, and to give shore an occasion of also taking the copper resistance and insulation of the cable. No doubt there are strong arguments in favour of non-interference with the regular sequence of the continuity readings; but the advantage of allowing shore the opportunity of not only trying all his apparatus, but also of making himself from time to time acquainted with the actual values obtained on the cable, seemed to outweigh all other considerations.



# TESTS TAKEN DURING THE LAYING OF THE FERNANDO NORONHA— ST. LOUIS SECTION.

## General Electrical Report.

75's of completed Section.  
C.R. per N.M. ... =5-3189 ohms  
Ind. Cap. " ... =0-36123 mfd.  
D.R. " ... =796-42 mgs.

TESTS TAKEN DURING THE LAYING OF THE FERNANDO NORONHA—  
ST. LOUIS SECTION.

Date.	Time.	Length, N.M.		C.R. observed.	D.R. observed per N.M.					Depth, fathoms.	Temperature.		Remarks.
		Paid out.	Total in Circuit.		Ship's Tests.		Shore Tests.				Bottom obsd.	Cable calc.	
					1st min.	5th min.	30th min.	1st min.	5th min.				
1892. Aug 31	6.0 p.m.	0-523	887-383	ohms. 5-4013	megohms. 911-0	megohms. 985-0	megohms. ...	megohms. ...	...	9½	77°-5	82°-5	Taken after end was landed and prior to paying out from after tank. Cable in after tank at observed temp. of 79°, calc. temp. 82°. While paying out.
"	Midnt.	24-545	"	"	628-0	802-0	1216-0	...	...	2260	33°-9	...	"
Sept. 1	Noon.	96-705	"	5-3596	780-0	859-0	1385-0	905-0	...	2400	33°-1	78°-5	"
"	Midnt.	185-728	"	5-2897	816-0	899-0	1465-0	1153-0	...	2666	34°	72°-5	"
Sept. 2	Noon.	281-14	"	5-2525	896-0	1160-0	1633-0	1225-0	1233-0	2280	...	69°	"
"	Midnt.	375-318	"	5-1849	1063-2	1471-0	2241-0	1349-0	...	2100	34°-75	63°	"
Sept. 3	Noon.	472-286	"	5-130	1289-0	1556-0	2507-0	1713-0	2218-0	1980	35°-25	58°	"
"	Midnt.	570-760	"	5-0587	1667-0	2149-0	3318-0	2112-0	2644-0	2300	...	51°	"
Sept. 4	Noon.	666-030	"	5-0215	2433-0	3062-0	4656-0	3053-0	3647-0	2300	34°-25	48°	After splicing the cable laid from after tank with cable in main tank. Cable in main tank at obsvd. and calc. temp. of 79°-5.
"	Midnt.	763-486	1682-685	5-140	1119-0	1328-0	2119-0	1430-0	1886-0	2300	...	58°-5	"
Sept. 5	Noon.	861-299	"	5-131	1144-0	1417-0	2229-0	1733-0	1901-0	2300	...	57°-5	"
"	Midnt.	946-083	"	5-0746	1278-0	1692-0	2518-0	1784-0	2204-0	2000	35°-0	52°-5	"
Sept. 6	Noon.	1050-033	"	5-0704	1502-0	1889-0	2993-0	1925-0	2406-0	2450	...	52°	"
"	Midnt.	1157-018	"	5-0377	1540-0	2092-0	3517-0	2406-0	3012-0	2750	33°-25	49°	"
Sept. 7	Noon.	1258-785	"	5-0050	2083-0	2874-0	4738-0	2978-0	3870-0	2780	...	46°	"
"	Midnt.	1360-082	"	4-9706	2551-0	3505-0	5599-0	3618-0	4947-0	2500	33°-75	42°-5	"
Sept. 8	Noon.	1460-285	"	4-934	2784-0	4324-0	7167-0	4644-0	6462-0	2180	...	39°	"
"	Midnt.	1562-094	"	4-9097	3836-0	6890-0	12236-0	5401-0	9768-0	1350	37°-5	36°-5	"
Sept. 9	Noon.	1646-451	"	4-894	5484-0	13385-0	28949-0	11089-0	25867-0	850	39°-5	35°	"
Sept. 11	2.0 p.m.	1657-4518	1657-4518	4-876	14834-0	706400-0	...	...	...	700	41°-0	...	The C.R. corrected is 4-896 ohms, per N.M. = calc. temp of 35°. Test on Fernando Noronha End before Final Splice.
"	...	1702-148	1702-148	4-901	13678-0	44267-0	97388-0	...	...	...	35°	35°-5	Test taken by Mr. Bent from Fernando Noronha Hut after completion of Section.

507

# General Electrical Report.

FERNANDO  
NORONHA—  
ST. LOUIS  
SECTION—  
*contd.*

INSULATION  
OF CABLE  
AFTER SUB-  
MERSION.

As a sequence to the Table showing the insulation of the cable during the laying, the following figures, giving the insulation after submersion, may be of interest. All these tests were taken by Messrs. Bent and Schneider at the Fernando Noronha Hut.

SEPT. 11TH, 1892.			SEPT. 12TH, 1892.		
Dielectric resistance per knot.			Dielectric resistance per knot.		
Megohms.			Megohms.		
Min.	Zinc Current.	Carbon Current.	Min.	Zinc Current.	Carbon Current.
1	13678·0	13912·0	1	14434·0	14348·0
5	44267·0	43474·0	5	53285·0	51658·0
10	70570·0	52926·0	10	86096·0	72168·0
15	82530·0	97385·0	15	98058·0	86096·0
20	97388·0	95476·0	20	94375·0	83177·0
30	97388·0	103600·0	30	122680·0	122680·0
40	115940·0	105850·0			
50	152170·0	139120·0			
60	167910·0	162310·0			

SEPT. 14TH, 1892.			SEPT. 15TH, 1892.		
Dielectric resistance per knot.			Dielectric resistance per knot.		
Megohms.			Megohms.		
Min.	Zinc Current.	Carbon Current.	Min.	Zinc Current.	Carbon Current.
1	13550·0	13245·0	1	13774·0	13774·0
5	48706·0	48706·0	5	52928·0	53823·0
10	71881·0	72768·0	10	79075·0	80061·0
15	76548·0	83016·0	15	91498·0	97045·0
20	89306·0	101390·0	20	112370·0	94190·0
30	94314·0	130980·0	30	133430·0	123170·0

SEPT. 16TH, 1892.		
Dielectric resistance per knot.		
Megohms.		
Min.	Zinc Current.	Carbon Current.
1	14506·0	15469·0
5	16393·0	51515·0
10	92464·0	66780·0
15	78734·0	91061·0
20	127870·0	96137·0
30	150250·0	109280·0
40	124350·0	122660·0
50	129160·0	117850·0
60	137640·0	144240·0

FERNANDO  
NORONHA—  
ST. LOUIS  
SECTION—  
*contd.*

INSULATION  
OF CABLE  
AFTER SUB-  
MERSION—  
*contd.*

INSULATION  
OF CABLE AT  
ST. LOUIS  
END.

The test of Sept. 11th was taken a few hours after the completion of section. The earth currents on this occasion were moderate.

The final guarantee test was taken on Sept. 16th. The earth currents were then strong and variable.

During the tests on the 12th and 15th the earth currents were moderate, while on the 14th they were discovered to be very strong and variable.

The "Silvertown," on her passage homewards after the Western and Brazilian 1891 Expedition, called at St. Louis, and there laid on October 7th, 1891, the Heavy Shore End and a portion of the Heavy Intermediate, both of india-rubber core, for the Fernando Noronha—St. Louis Section of the South American Cable Company's system.

At the time of laying, this cable gave an insulation of 5550·6 megohms per knot, reduced to 75° F., as against 5358·5 megohms per knot, in Factory, as core at 75° F. The total length then laid was 6·99 N.M. The calculated temp. was 88° F.

In the "Silvertown's" outward voyage on the South American Cables Expedition, the ship, on the 15th and 16th of May, 1892, completed the Heavy Intermediate, and laid all the Light Intermediate and Heavy Deep Sea required at the St. Louis End of the Fernando Noronha—St. Louis Section. The cable laid on this occasion was all of gutta-percha core. The india-rubber cable (6·99 N.M.) laid in the previous year now gave, before splicing on to the gutta-percha cable on board, an insulation of 6564·8 megohms per knot at a calculated temp. of 74°·5; this reduced to 75° would be equivalent to 6400·0 megohms per knot.

After laying out gutta-percha cable and buoying the end, there then being 44·857 N.M. in circuit, the tests from St. Louis gave on this length an insulation of 5444·0 megohms per knot at a mean bottom temp. of 57°·75; this reduced to 75° F. would equal 1163·0 megohms per knot. There was some question raised at the time as

FERNANDO  
NORONHA—  
ST. LOUIS  
SECTION—  
*contd.*

INSULATION  
OF CABLE AT  
ST. LOUIS  
END—*contd.*

CHANGES IN  
SEA  
TEMPERA-  
TURES.

to whether this resistance was not too low, but it must be remembered that the gutta-percha portion of this cable gave only from 850 to 950 megohms per knot, reduced to 75° when tested on board, the lowest insulation of any section shipped.

Mr. Crouch was left at St. Louis to test this cable to the buoyed end while the ship was engaged in laying the Pernambuco—Fernando and the Fernando—St. Louis Sections. The tests shewed a considerable variation, falling so low as 2428·0 megohms per knot at sea temperature (26th July). The readings, however (30 minutes with each current), were invariably steady, and the electrification perfectly satisfactory. Mr. Crouch reported that the evidence collected by French observers shewed that frequent and very great changes in the temperature of the sea along the shore on this part of the coast took place. The differences we have from time to time obtained in bottom temperatures near this coast, and the variations we have observed in the temperatures calculated from copper resistance, would seem in a measure to confirm these observations. The changes in insulation observed by Mr. Crouch would appear to proceed from the same cause.

On September 11th, 1892, when the final splice was made between the cable above referred to and the cable laid from Fernando, the section from the ship to St. Louis gave an insulation of 3500 megohms per knot at a mean bottom temperature of 51° F. This result was much too low, and considering that previous tests on this particular portion of the section had also shewn a comparatively low dielectric resistance, it was very generally supposed that the joint between the india-rubber and gutta-percha cores had not turned out quite so satisfactorily as expected.\*

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\* NOTE.—See the Electrical Report on the Repairs to this section for evidence as to the thorough permanence of this joint, and the satisfactory electrical condition of the cable at the St. Louis End.

# General Electrical Report.

FERNANDO  
NORONHA—  
ST. LOUIS  
SECTION—  
*contd.*

BOTTOM  
TEMPERA-  
TURES AND  
DIVISION OF  
SECTION.

In the division of the Fernando Noronha—St. Louis Section into lengths at different depths with corresponding temperatures, you will observe that Messrs. Clark, Forde and Taylor make the mean bottom temperature 36°. I am, however, unable to get a higher mean bottom temperature than 35°. The following is the division of the section as determined by Messrs. Clark, Forde and Taylor:—

	Lengths.		Depths.		Temps.
	N.M.		Fms.		F.
F. Noronha End—	2.49	at	20	at	74°.0
	1.44	,,	220	,,	50°.0
	1.99	,,	600	,,	39°.0
	1623.60	,,	2779	,,	35°.3
	44.711	,,	688	,,	40°.5
	23.867	,,	75	,,	60°.0
St. Louis End—	4.000	,,	8	,,	80°.0

1702.148 mean = 2194 mean = 36°.0

Electrical Report (I. R. G. P) ,, = 2172 ,, = 35°.0

The mean bottom temperature calculated from copper resistance ranged from 35°.0 to 36°.5. The observed bottom temperatures were taken from soundings made on various expeditions, and were selected from a very large number. A considerable proportion of the temperature soundings taken on the outward voyage of the "Silvertown" on the South American Cables Expedition had to be rejected, owing to the fact that the indices of the deep sea thermometers frequently shifted from the peculiar vibration imparted by the india-rubber springs forming the accumulator of the sounding machine.

The bottom temperatures in 6 and 9 fathoms off St. Louis, 66°.4 and 65°.0 respectively, seem very low, but there is no doubt as to their accuracy.

BOTTOM  
TEMPERA-  
TURES.

In 20 fathoms the bottom temperature was 62°. The distances from the beach of these various depths were 0.75, 1.75, and 7.5 N.M. respectively. These temperatures



## General Electrical Report.

FERNANDO  
NORONHA—  
ST. LOUIS  
SECTION—  
*contd.*

BOTTOM  
TEMPERA-  
TURES—  
*contd.*

were taken in the month of May. In this month the surface temperatures ranged from 69° to 71°. In the month of October the surface temperatures rose to 84°–85°, and in the month of December it would appear to again fall. In the month of October the bottom temperature in 50 fathoms was observed to be 66° F.

At the Fernando Noronha End the bottom temperatures were naturally much higher. In 7½ fathoms the bottom temperature was 79°·0, in 9 fathoms 76°·3, and in 30 fathoms 75°·0. These temperatures were taken in the month of May when the surface temperatures ranged between 79°·0 and 81°·0. In the month of August the surface temperature at Fernando Noronha varied only between 78°·0 and 78°·7.

MIRROR SIG-  
NALS DURING  
LAYING.

During the earlier part of the laying from Fernando Noronha towards St. Louis, the cable in the after tank, some 890 miles, was alone in circuit. Through this length four Leclanché No. 2 cells were used on ship and on shore for speaking with the mirror instrument. Both ship and shore sent direct into cable switching in 83 microfarads when receiving. So soon as all the cable, laid and on board, had been joined up, forming a length of about 1690 miles, we found it necessary to increase the ship's battery to 36 cells and the shore's to 18 cells, and we were then obliged to send, as well as receive, through the 83 microfarads. The signals, using a two-fibre suspension, were remarkably sharp and well defined—consequently very easy to read.

WORKING  
SPEED.

SPEAKING  
AND  
TESTING  
INSTRU-  
MENTS.

After the completion of the section, the mirror instrument was employed between St. Louis and Fernando Noronha until the recorder tables arrived at the former place. The working speed attained has reached 140 letters per minute, St. Louis using 18 cells and a condenser capacity of from 60 to 80 microfarads. Fernando Station, when cable was first opened, used 9 cells and a condenser

WORKING  
SPEED  
—*contd.*  
—  
SPEAKING  
AND  
TESTING  
INSTRUMENTS  
—*contd.*

capacity of 50 microfarads. When the recorders were fitted up, the working was carried on direct between Pernambuco and St. Louis. The normal speed between these stations ranges between 60 and 76 letters per minute, but with automatic transmitter, and under extremely favourable conditions, the speed has reached 130 letters per minute. At St. Louis, from 10 to 18 cells are used, with a condenser capacity of from 50 to 60 microfarads; at Pernambuco, from 13 to 25 cells are employed, with a condenser capacity of from 50 to 70 microfarads.

The type of recorder used is that with permanent magnets, P.K. vibrator, and electrostatic mill and electro-motor for drawing off the tape.

The reports as to the working of the Willmott automatic transmitters appear to be generally favourable, though at first there were some complaints with regard to them from St. Louis.

It would be advisable to discontinue the use of relays of the post-office pattern with the Morse instruments supplied to ships and huts. During the laying of a cable and for general work we find the Siemens relay far more suitable.

The glass rods lately supplied, instead of aluminium ones, for the suspensions of astatic galvanometers have not met with a favourable reception from the electricians who have used them at various huts. These glass rods are undoubtedly well adapted for factory testing, but are not suited to the rough usage to which all apparatus intended for hut work must of necessity be occasionally submitted. It cannot be too strongly impressed upon the makers of testing instruments that every article intended for use at huts should be of the simplest and strongest construction.

I am glad to be able to favourably report on the "Standard" and "Continuity" condensers supplied for



# General Electrical Report.

WORKING  
SPEED—  
*contd.*  
—  
SPEAKING  
AND  
TESTING  
INSTRUMENTS  
—*contd.*

the last two expeditions. A great improvement has been made in this direction. The "Signalling" condensers have, however, given us a great deal of trouble. These, for ship use, are made up in cases of 10 condensers, each of 10 microfarads, and were constructed for signalling during the laying of the Fernando—St. Louis Section. Several of these condensers, after exposure for some time to a very high temperature, failed altogether.

TANK TEM-  
PERATURES.

The highest tank (cable and water) temperatures recorded during the expedition were observed at Bahia. You will notice some discrepancy between the observed (water) and calculated (cable by C.R.) temperatures. These differences commenced to make themselves prominent after a temperature of 76° had been passed. The greatest difference between the two temperatures was  $4\frac{1}{2}^{\circ}$ ; the average difference about 3°; up to 75° or 76° the calculated and observed temperatures agreed very well.

		Tank water observed.	Cable calc. by C.R.	Air.	Sea surface.
June 24th	..	78°·0	82°·5	78°·0	79°·0
July 11th	..	78°·0	82°·0	75°·0	76°·0

AIR AND SEA  
TEMPERA-  
TURES

The highest air and sea surface temperatures were observed on the outward voyage between Dakar and Fernando Noronha, when they respectively rose to air, 83°·5; sea surface, 82°·25. This was towards the end of May, when the tank temperatures recorded were: water 68°·0, and cable calculated 70°·0. These low tank temperatures were due to the water having been pumped into the tanks at a temperature of 66°·0; being left unchanged, the water in the tanks took from May 11th, the date of pumping in, to June 24th, to attain the maximum temperature of 78°·0.

*General Electrical Report.*

CODE  
SIGNALS.

Mr. J. Rymer-Jones suggested the advantage of adopting some code whereby the ordinary communications which pass between ship and shore might be effected more rapidly, and he drew out a Table in which numbers were used to indicate the various instructions, directions, and remarks, usually the subjects of transmission between the Testing-room on board ship and the Hut. We found this code most serviceable, the time saved, a very important factor, not being the only advantage gained through its employment

HUTS AND  
STATIONS.  
—  
PERNAMBUCO.

At Pernambuco the South American Company's Cable Hut, an iron one, is situated close to the Cable House jointly used by the Brazilian Submarine and the Western and Brazilian Companies on the Praia da Olinda. Communication between the South American Company's Station in the Rua do Commercio and the Hut is maintained by four underground lines of india-rubber core. It would, however, seem that the plan adopted by other companies, *i.e.*, gutta-percha core laid in iron pipes filled with water, is more likely to prove permanent than the light cables we have put down, although their core is india-rubber. The distance between the Office and the Hut is between one and one-and-a-quarter miles.

Pneumatic tubes have been laid between the Office and the Brazilian Government's land-line Station.

FERNANDO  
NORONHA.

At Fernando Noronha the cable ends are landed on a sandy beach in Peak Bay, about 0.4 N.M. to the westward of the town; they are led into a two-roomed stone house, built by convict labour from a plan given to the Governor of the island by Mr. M. H. Gray on the occasion of our visit to the island in September, 1891. For further convenience, in the case of watch being kept night and day, an iron hut was erected alongside the stone building. Communication is maintained with the Office by means of five underground cables, india-rubber core. The Government placed

HUTS AND  
STATIONS—  
*contd.*

—  
FERNANDO  
NORONHA—  
*contd.*

ST. LOUIS.

some portion of the Government Offices (Secretaria do Governo) at the disposal of the Company as a telegraph station. The distance between the Office and the Hut is about half-a-mile.

The cable end is taken into the building on the beach at Guet 'n' Dar belonging to the Spanish National Company. The house is of wood and brick, and, in addition to a testing-room, contains two sleeping-rooms, larder, &c., with courtyard, all enclosed by a masonry wall. Three new land-lines, india-rubber core, connect the cable with the Office, distant about 200 yards. This office has been acquired comparatively recently. Communication between the Station and the Government Telegraph Office is maintained by means of two gutta-percha underground cables which cross the branch of the river separating Guet 'n' Dar from the European town on the main island.

I remain, Sir,

Very faithfully yours,

E. MARCH WEBB.

## ELECTRICAL REPORT.

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### SUMMARY OF EVENTS.

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## SUMMARY OF EVENTS.

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1891.	
Sept. 14th.	S.S. "Silvertown" left Pernambuco, sounding towards Fernando Noronha.
" 18th.	Anchored off the island of Fernando Noronha.
" 20th.	Left Fernando Noronha, sounding towards St. Louis.
Oct. 5th.	Anchored at Dakar.
" "	Left Dakar, sounding towards St. Louis.
" 6th.	Anchored off St. Louis.
" 7th.	Commenced landing Shore-End (I.R. core) at St. Louis.
" 8th.	Buoyed end of Heavy Intermediate (I.R. core) off St. Louis.
" "	Left St. Louis for the Canary Islands.
1892.	
Feb. 10th.	S.S. "Silvertown" moored off works.
" 11th.	Commenced shipping cable.
Apr. 22nd.	Completed " "
" 26th.	"Silvertown" left moorings and anchored off Greenhithe.
" 29th.	"Silvertown" left Greenhithe for sea.
May 8th.	Anchored at Santa Cruz de Tenerife.
" "	Left Tenerife for Dakar.
" 12th.	Anchored off Dakar.
" "	Messrs. A. P. Crouch, H. B. Forde, J. F. Lumsden, and C. Barret left ship with Molt (jointer) and cable hands Cakebread and Buckmaster. The party proceeds to St. Louis by rail to-morrow morning to carry out land-line work.
" "	Landed instruments for Hut, and stores for Station.
" 13th.	Electrical apparatus and stores for St. Louis were to-day passed through custom-house and put on train.
" 14th.	Left Dakar for St. Louis. Some soundings taken.

*Electrical Report.—Summary of Events.*

1892.	
May 15th.	Anchored off St. Louis.
" "	Proceeded to buoy on end of I.R. cable laid last year. Picked up and tested; cable "o.k." Spliced on the end of Heavy Intermediate (I.R. cable) laid to Heavy Intermediate (G.P. cable) on board. Depth at splice=21 fms.
" "	Commenced paying out.
" 16th.	Paid out Heavy Intermediate, Light Intermediate, and Heavy Deep Sea. Buoyed end of Heavy Deep Sea in 684 fms.
" "	Anchored off St. Louis.
" "	Shore party, with the exception of Mr. Crouch, rejoined ship. Mr. Crouch stays at St. Louis to test cable during our absence.
" "	Left St. Louis for Dakar.
" 17th.	Anchored at Dakar.
" "	Left Dakar. Sounding towards Fernando Noronha.
" 25th.	Anchored off Fernando Noronha.
" 27th.	Left Fernando Noronha. Sounding towards Pernambuco.
" 29th.	Anchored off Pernambuco
" "	Mr. J. Rymer-Jones, at Rio, and Mr. G. H. Bailey, at Pernambuco, have been duplexing the Pernambuco—Bahia—Rio Sections.
" 31st.	Left Pernambuco for sounding.
June 1st.	Anchored off Pernambuco
" "	Sent Mr. F. W. A. Knight on shore to assist Mr. Bailey
" 2nd.	Left Pernambuco for sounding.
" 3rd.	Anchored off Pernambuco.
" "	Mr. R. E. Peak joined "Silvertown" (came up from River Plate).
" "	Left Pernambuco for Bahia. Some soundings taken <i>en route</i> .
" 6th.	Anchored at Bahia.
6th and 7th.	Official tests taken by Mr. R. E. Peake on all sections.



*Electrical Report.—Summary of Events.*

1892.	
June 11th.	At Bahia. "Scotia" came in from Santos. She is to repair the old Bahia—Pernambuco Section.
" 17th.	At Bahia. Messrs. J. Rymer-Jones and Appleyard arrived from Rio.
" "	Mr. Forde, sen., and Mr. Appleyard left for England. Mr. Appleyard's health necessitated his going home.
" "	Mr. M. H. Gray left for Rio.
" 18th.	Mr. J. Rymer-Jones left ship to complete duplex work.
" "	"Silvertown" left Bahia for sounding.
" 28th.	" anchored at Bahia.
" 30th.	Left harbour to run fresh water into tanks.
" "	Returned same day and anchored in harbour.
July 4th.	At Bahia. Mr. J. Rymer-Jones left for Pernambuco to complete duplex work there.
" 15th.	"Silvertown" left Bahia for Rio.
" 20th.	Anchored at Rio. Found Mr. M. H. Gray suffering from severe attack of low fever. Mr. Lumsden was left at Rio to assist Mr. Gray in the work.
" "	Left Rio for Pernambuco.
" 26th.	Anchored off Pernambuco.
" 27th.	Coiled 4·0 N.M. Shore-End into lighter for Pernambuco End of Fernando Noronha Section. Landed instruments and stores for hut and station.
" 29th.	Laid the 4·0 N.M. of Shore-End cable from lighter in tow of tug; buoyed end in 10 fms.
" "	Remainder of station stores and land-line cable landed.
" "	Cable hut completed.
" 30th.	Left Pernambuco for Fernando Noronha, sounding <i>en route</i> .
" "	Messrs. J. Rymer-Jones and F. Knight remain at Pernambuco.
Aug. 2nd.	Anchored off Fernando Noronha.
" 3rd.	Landed stores and instruments for hut and station.
	NOTE.—A two-roomed masonry house has been built here for reception of Shore-Ends and testing apparatus.

1892.	
Aug. 4th.	Landed drums of I.R. underground cable. Finished trench between cable house and beach. Large hut erected alongside the masonry house in order to provide accommodation for staff and apparatus.
„ 5th.	Ship went out to sound, returning to anchorage same evening.
„ 6th.	„ „ „ „
„ 7th.	Landed Shore-End for the Pernambuco Section. Paid out Shore-End Heavy Intermediate, Light Intermediate, and Heavy Deep Sea. Buoyed the Heavy Deep Sea in 700 fms.
„ „	Set on for Pernambuco. Mr. Willmott-Dixon left in charge at hut in order to set up testing apparatus in readiness for our return.
„ 9th.	Anchored off Pernambuco.
„ „	Mr. R. Kaye Gray, from England, and Mr. E. W. Parsoné, from Rio, joined ship.
„ 10th.	Proceeded to end of Shore-End, buoyed by lighter. Picked up and spliced on. Joint found to be faulty. Cut it out and re-made it. Owing to this delay ship had to hang on to cable (and anchors) all night.
„ „	Mr. Parsoné left ship. He proceeds to England by next mail. Mr. R. Kaye Gray accompanies expedition.
„ 11th.	Commenced paying out towards Fernando Noronha. Mr. J. Rymer-Jones, assisted by Mr. Knight, takes charge of cable end during the laying.
„ 13th.	Up to buoy on Fernando Heavy Deep Sea. On picking up found cable faulty shorewards. This was afterwards discovered to be due to damage from sharp rocks. Cable towards Pernambuco had been cut, but was re-spliced to cable on board and paid out while the damaged Fernando End was being picked up.
„ 14th.	Damaged pieces picked up. Cable tested and found “O.K.” on both sides.
„ „	All the Heavy Deep Sea and part of the Light Intermediate on Fernando End picked up.

*Electrical Report.—Summary of Events.*

1892.	
Aug. 14th.	Final Joint and Splice between Light Deep Sea on Pernambuco side, and Light Intermediate on Fernando side made and slipped.
	PERNAMBUCO—FERNANDO NORONHA SECTION COMPLETED.
„ „	Ship came to anchor off town.
	Mr. H. B. Forde remains on shore here to test the Pernambuco Section during our absence. Mr. Willmott-Dixon also remains to assist him.
„ 15th.	Left for Pernambuco.
„ 17th.	Anchored off Pernambuco.
„ „	A jointer, with two cable hands, was sent on shore to assist in land-line work between hut and office.
„ „	Mr. R. Kaye Gray left expedition. He proceeds to Rio shortly.
„ „	Mr. R. E. Peake went on shore to test the Fernando Section.
„ „	Ship left for Bahia. Messrs. Rymer-Jones and Knight remaining here.
„ 20th.	Anchored at Bahia.
„ 24th.	Left Bahia for Pernambuco.
„ „	NOTE.—While at Bahia news was received that Mr. M. H. Gray left Rio, with Mr. J. Lumsden, for England. Owing to the effects of fever the doctors had advised him not to stay in this climate any longer.
„ 27th.	Anchored off Pernambuco.
„ „	Messrs. J. Rymer-Jones and F. Knight joined “Silver-town.”
„ „	Mr. Peake, with the jointer and cable hands, rejoined the ship.
„ „	Left Pernambuco for Fernando Noronha.
„ 29th.	Anchored off Fernando Noronha.
„ 30th.	Mr. J. Schneider went on shore to take charge of cable end during laying of Fernando Noronha—St. Louis Section. Mr. Willmott-Dixon remains to assist him. Mr. Bent remains here to test cables on behalf of Messrs. Clark, Forde, and Taylor.

1892.	
Aug. 31st.	Landed Shore-End for Fernando Noronha—St. Louis Section.
„ „	Commenced paying out towards St. Louis.
Sept. 9th.	Up to buoy on St. Louis Heavy Deep Sea. While picking up the buoy rope parted.
„ „	Buoyed Fernando End and commenced to grapple for St. Louis End.
„ 10th.	Hooked St. Louis End. Got cable up. Tested towards St. Louis. Found cable “o.k.”
„ 11th.	Spliced on St. Louis End (Heavy Deep Sea) to Light Deep Sea on board. Commenced paying out towards Fernando End.
„ „	Up to Fernando End. Picked up and tested both ways. Cables “o.k.” Much difficulty was experienced in making joint between the two ends, owing to air bubbles. At the third attempt the joint was successful.
„ „	Final splice made and bight slipped. Fernando Noronha — St. Louis Section completed.
„ „	Anchored off St. Louis.
„ 12th.	Left St. Louis for Tenerife. Mr. Crouch remains at St. Louis for Guarantee Tests. He returns by mail from Dakar.
„ 16th.	Anchored at Santa Cruz de Tenerife. M. Barret, of the South American Cable Company's staff, left ship. He proceeds to Dakar by first steamer.
„ „	Messrs. J. Rymer-Jones and F. Knight left ship. They proceed to Rio and the River Plate, to continue duplex work for the Western Brazilian Company.
„ „	Mr. Bent sent results of Final Guarantee Tests taken to-day on the Pernambuco—Fernando Noronha and the Fernando Noronha—St. Louis Sections. Tests extremely satisfactory and cables accepted.
„ 18th.	Left Tenerife for the Thames.
„ 27th.	Anchored off Greenhithe.
„ „	“Silvertown” went into Victoria Docks.

ELECTRICAL REPORT.

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LOADING OF S.S. "SILVERTOWN."

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LOADING OF S.S. "SILVERTOWN."

AFTER TANK.

H.I. pt. "4B," = 5.00 N.M.

S.E. pt. "3" = 1.50 N.M.

H.I. pt. "4A" = 0.99 "

L.I. pt. "2A" = 1.49 "

H.D.S. pt. "2" = 2.99 "

S.E. "3A" = 1.50 N.M.

H.I. pt. "4B" = 0.99 "

L.I. pt. "4C" = 1.49 "

H.D.S. pt. "1" = 1.99 "

L.D.S. pt. "5" (a) = 145.662 "

L.D.S. "6" = 236.27 "

L.D.S. pt. "7" (a) = 5.846 "

L.D.S. pt. "10" (a) = 26.537 "

L.D.S. "9A" = 234.879 "

L.D.S. "11A" = 232.219 "

S.E. ...  
H.I. ...  
L.I. ...  
H.D.S. ...  
L.D.S. ...

N.M.  
3.0  
6.98  
2.98  
4.98  
881.413  
899.353

MAIN TANK.

L.I. pt. "4C" = 16.00 N.M.

H.D.S. pt. "1" = 16.99 "

L.D.S. "7A" = 160.298 N.M.

L.D.S. "5A" = 144.115 "

L.D.S. "11B" = 143.828 "

L.D.S. pt. "7" (b) = 214.459 "

L.D.S. pt. "10" (b) = 79.51 "

L.D.S. "9B" = 53.116 "

L.D.S. pt. "5" (b) = 79.89 N.M.

L.I. ...  
H.D.S. ...  
L.D.S. ...

N.M.  
16.0  
16.99  
875.216  
908.206

FORE TANK.

S.E. pt. "3" = 7.0 N.M.

H.I. pt. "4A" = 6.99 "

L.I. pt. "2A" = 14.990 "

H.D.S. pt. "2" = 17.986 "

L.D.S. "11" = 124.366 "

L.D.S. "9" = 178.602 "

S.E. ...  
H.I. ...  
L.I. ...  
H.D.S. ...  
L.D.S. ...

N.M.  
7.0  
6.99  
14.99  
17.986  
302.968  
349.934

I.R. core.





## ELECTRICAL REPORT.

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# PERNAMBUCO — FERNANDO NORONHA CABLES.

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## INDIA RUBBER CORE.

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### ELECTRICAL PARTICULARS AND SPECIFICATION.

75° VALUES OF COMPLETED SECTIONS.

FINAL TESTS ON COMPLETED SECTIONS.

75° VALUES OF SHIPPED SECTIONS.

FINAL TESTS ON SHIPPED SECTIONS.

75° VALUES OF PERNAMBUCO—FERNANDO NORONHA LAID  
AND COMPLETED CABLE.

TABLE OF DEPTHS, TEMPERATURES, AND CORRESPONDING  
LENGTHS OF CABLE (TABLE A).

DETAILS OF SUBDIVISION OF THE LAID AND COMPLETED  
CABLE (TABLE B).

FINAL TESTS ON THE LAID AND COMPLETED CABLE.

TABLE A. FIRST TESTS AFTER COMPLETION.

TABLE B. FINAL GUARANTEE TESTS.

COMPARISON OF TESTS ON THE LAID AND COMPLETED  
CABLE.

EXPENDITURE TABLE.



## ELECTRICAL PARTICULARS.

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### SOUTH AMERICAN CABLES.

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#### INDIA RUBBER CORE,

$$\frac{13209}{30}$$

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##### *Conductor.*

7 tinned copper wires stranded.

Diam. each wire = 0".042.

„ strand = 0".126 ("d").

Weight per N.M. = 225 lbs.

##### *Core.*

Silvertown, No. 30. With spiral cotton tapes, coated with I.R.  
The whole vulcanized.

Diam. core, without tapes = 0".3175 ("D").

„ „ with „ = 0".3575.

Weight of Dielectric per N.M. = 225 lbs.

$$\text{Log } \frac{D}{d} = 0.401373.$$

Specific Conductor Res. = 98.5% of pure copper.

„ Ind. Cap. = 0.1457 (or 0.0535 mcfd. in terms of a cube knot).

Specific D.R. = 9696.0 megs. (or 2645.0 megs. in terms of a cube knot).

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### SPECIFICATION.

##### *Conductor.*

Res. per N.M. at 75° F. not to exceed 5.55 ohms.

##### *Dielectric.*

Ind. Cap. not to exceed 0.380 mcfd. per N.M.

Res. to be not less than 2000.0 megs. per N.M., reduced to 75° F., after 1 min. electrification.

Submerged and completed cable to have a Dielectric Res. per N.M., reduced to 75° F., of not less than 3000 megohms after 5 min. electrification.

INDIA RUBBER CABLE.

75° VALUES OF COMPLETED SECTIONS.

Sections.	Types and Factory Numbers.	Lengths. N.M.	C.R.		Ind. Cap.		D.R.	
			Total.	Per N.M.	Total.	Per N.M.	Absolute.	Per N.M.
"9" .....	L.D.S. (2083).....	178·616	961·436	5·3826	64·7604	0·3626	21·589	3847·0
"11" .....	" .....	124·384	668·587	5·3754	45·2661	0·3639	31·63	3934·1
"2" .....	H.D.S. (2143) ....	21·0	113·506	5·4052	7·5205	0·3581	186·01	3908·0
"2A" .....	L.I. (2144) .....	16·50	89·034	5·3960	6·0347	0·3657	300·7	4961·0
"3" .....	S.E. (2146) .....	8·5	45·886	5·3984	3·1087	0·3657	388·4	3753·0
"4A" .....	H.I. (2145) .....	8·0	42·957	5·3696	2·9219	0·3652	401·1	3209·0

# INDIA RUBBER CABLE.

## FINAL TESTS ON COMPLETED SECTIONS.

1892. Date of Test.	Section.	Type.	Factory Number.	Lengths N.M.	C.R. Observed.		Temperatures.		Ind. Cap.		D.R. observed.			Percentage improvement in Electrification 30 min.
					Total.	Per N.M.	Obsvd.	Calcd.	Total.	Per N.M.	Abs.	Per N.M. Red. to 75° F.	Per N.M. Red. to 75° F.	
Feb. 15	" 9 "	L.D.S.	2083	178·616	921·28	5·158	47°·5	54°·5	67·397	0·3773	49·957	8922·8	4456·7	285
" 21	" 11 "	"	2083	124·384	640·02	5·1457	47°·5	54°·0	45·503	0·3658	70·416	8758·4	4301·2	249
" "	" 2 "	H.D.S.	2143	21·0	107·77	5·1319	52°·0	50°·0	7·4976	0·3570	548·2	11512·0	4937·2	188
" "	" 2 A "	L.I.	2144	16·50	84·79	5·1388	52°·0	51°·5	5·9589	0·3611	1098·9	18131·0	8181·1	370
" 25	" 3 "	S.E.	2146	8·5	44·05	5·1824	58°·0	55°·5	3·198	0·3759	1566·8	13318·0	6881·2	275
" 23	" 4 A "	H.I.	2145	8·0	41·20	5·150	53°·5	55°·0	3·0514	0·3814	1872·9	14983·0	7611·4	271

## INDIA RUBBER CABLE.

## VALUES AT 75° F. OF SHIPPED SECTIONS.

Tank.	Factory Sections.	Types.	Length of each Type.	Shipped Lengths.	C.R.		Ind. Cap.		D.R.		Order of Coils.	
					Total.	Per N.M.	Total.	Per N.M.	Absolute.	Per N.M.		
In order of coiling.												
{ After, "A 2",.. }	pt. "3"	S.E.	1·500	{ Spliced 6·970 }	8·0806	5·3870	0·5470	0·3647	2503·0	3754·0	Top. Bottom. { pt. 226 } pt. 97 " 227 } " 228 " 229 " 232 " 233 " 150 " 151	
	" "4A"	H.I.	0·990		5·3460	5·3998	0·3652	0·3688	5053·0	5005·0		
	" "2A"	L.I.	1·490		8·0242	5·3854	0·5469	0·3670	4954·0	7382·0		
	" "2"	H.D.S.	2·990		16·0880	5·3805	0·0785	0·3607	1698·0	5076·0		
Totals.....					37·5388	5·3858	2·5376	0·36408	720·4	5022·0		
{ Fore, "F 1" ... }	pt. "3"	S.E.	7·000	{ Spliced 349·934 }	37·830	5·4040	2·5617	0·3659	459·8	3219·0	pt. 97 { pt. 218 " 228 } { pt. 226 " 229 } { " 227 " 232 } { " 228 " 233 } { " 229 " 150 } { " 198 " 151 } { " 199 " 16 } { " 206 " 30 } { " 207 " 226 } { " 227	
	" "4A"	H.I.	6·990		37·703	5·3940	2·5494	0·3646	436·2	3050·0		
	" "2A"	L.I.	14·990		81·104	5·4105	5·4805	0·3657	320·5	4804·0		
	" "2"	H.D.S.	17·986		97·290	5·4092	6·4237	0·3572	209·0	3760·0		
	" "11"	L.D.S.	124·366		669·150	5·3800	45·2597	0·3639	31·63	3931·0		
	" "9"	"	172·602		965·800	5·4075	64·7544	0·3626	21·59	3855·0		
Totals.....					1888·877	5·3979	127·0294	0·3630	11·07	3873·0		



# INDIA RUBBER CABLE.

## FINAL TESTS ON SHIPPED SECTIONS.

Date.	Tank.	Factory Sections.	Types.	Shipped Section. Length.	C. R. Observed.		Temperatures.		D. R. Observed.			Percentage Improvement Electrification at 30 min.
					Total.	Per N.M.	Observed.	Calculated.	Abs.	Per N.M.	Per N.M. Red. to 75°	
1892. April 22	After "A 2"	Pt. "2"	H.D.S.	6.970	35.63	5.1119	49° 0	50° 0	2054.4	14319.0	6141.0	297.0
		" "2A"	L.I.									
		" "4A"	H.I.									
		" "3"	S.E.									
April 24	Fore "F.I."	"9"	L.D.S.	349.934	1793.19	5.1345	50° 0	50° 0	28.058	9818.4	4210.9	295.0
		"11"	"									
		Pt. "2"	H.D.S.									
		" "2A"	L.I.									
		" "4A"	H.I.									
		" "3"	S.E.									

PERNAMBUCO—FERNANDO NORONHA SECTION.

VALUES AT 75°, DEPTHS AND POSITIONS OF SPLICES, &c.

Types.	Sections.	Factory Numbers.	Lengths. N.M.	C.R.		Ind. Cap.		D.R.		Splices.			Dates of laying, 1892.		
				Total.	Per N.M.	Total.	Per N.M.	Abs.	Per N.M.	Positions of		Between types.			
										Lat. S.	Long. W.				
										8° 2' 9	34° 52' 2	Pos. Pernambuco Hut.			
S.E.	Pl. "3"	2146	3·998	21·622	5·408	1·4658	0·3665	800·1	3199	9	Laid by lighter "Ypiranga."			Aug. 11.	
"	" "3"	2146	2·992	16·154	5·399	1·0927	0·3652	1084·6	3245		8° 2' 1	34° 48' 5	S.E. & S.E.	"	
H.I.	" "4 A"	2145	6·990	37·703	5·394	2·5494	0·3646	436·2	3050		8° 1' 0	34° 45' 9	S.E. & H.I.	"	
L.I.	" "2 A"	2144	14·990	81·104	5·4105	5·4805	0·3657	320·5	4804		22	7° 58' 1	34° 39' 3	H.I. & L.I.	"
H.D.S.	" "2"	2143	17·986	97·290	5·4092	6·4237	0·3572	209·0	3760		300	7° 50' 9	34° 26' 3	L.I. & H.D.S.	"
L.D.S.	" "11"	2083	124·366	689·150	5·380	45·2597	0·3639	31·63	3931		1650	7° 38' 8	34° 13' 7	H.D.S. & L.D.S.	" 12
"	" "9"	2083	171·345	926·370	5·4066	62·1143	0·3625	22·59	3870		2500	6° 3' 0	33° 17' 3	L.D.S. & L.D.S.	" 13
"	" "9"	2083	0·976	5·2642	5·392	0·3535	0·3620	3611·0	3525		750	3° 47' 8	32° 28' 6	"	" 14
L.I.	" "2 A"	2144	0·719	3·872	5·3854	0·2369	0·3670	10267·0	7382		233	3° 48' 3	32° 27' 3	{ FINAL SPLICE } L.I. & L.D.S. }	" "
H.I.	" "4 A"	2145	0·990	5·346	5·3998	0·3652	0·3688	5053·0	5005		183	3° 48' 55	32° 26' 9	H.I. & L.I.	" 7
S.E.	" "3"	2146	1·493	8·0428	5·387	0·5445	0·3647	2515·0	3754	26	3° 49' 0	32° 26' 05	S.E. & H.I.	" "	
			346·845	1871·918	5·397	125·8862	0·3630	11·220	3892		3° 50' 0	32° 25' 2	Pos. F. Noronha Hut.		

Core, 225/225. Dielectric of Silvertown, I.R.  $\frac{13209}{30}$

**PERNAMBUCO—FERNANDO NORONHA SECTION.**

Table of Depths, Temperatures, and Corresponding Cable Lengths,  
showing subdivision of Section.

**TABLE A.**

Preparatory Selection.				Subdivision into Groups.			
Cable as laid.	Depths.	Corresponding Temps.	Corresponding Lengths.	Mean Depths.	Mean Temps.	Lengths.	
N.M.	fms.	F.	N.M.	fms.	F.	N.M.	
21	15	75°·5	21	15	75°·5	21	Pernambuco End.
27	150	54°·0	6	650	43°·0	21	
32	450	40°·0	5				
42	1050	38°·0	10				
57	1750	35°·5	15				
77	2150	34°·25	20	1900	34°·7	89	
97	2300	34°·0	20				
109	1800	35°·0	12				
119	1400	37°·0	10				
131	1700	36°·0	12				
136	2300	34°·0	5	2450	33°·55	171	
166	2400	33°·75	30				
277	2500	33°·5	111				
297	2200	34°·25	20				
302	2000	34°·5	5				
307	1600	36°·5	5	1300	37°·3	41	Corrected to 40·667 N.M.
332	1400	37°·0	25				
342	950	38°·5	10				
343	550	39°·0	1				
344	200	45°·0	1				
345	100	60°·0	1	80	66°·0	3 845	Corrected to 4·178 N.M. F. Noronha End.
346·845	10	79°·0	1·845				
Means	1889	37°·8	346·845	1889	37°·8	346·845	

# DETAILS OF SUBDIVISION OF SECTION, SHEWING ELECTRICAL VALUES.

538

PERNAMBUCO—FERNANDO NORONHA SECTION.  
(INDIA RUBBER CORE.)

FIRST TEST AFTER COMPLETION.

AUGUST 14TH, 1892.

Length=346·845 N.M.

Tests taken by Mr. Peake on behalf of Messrs. Clark, Forde, and Taylor.  
(Mr. E. March Webb present.)

D.R. in Megohms.

Zinc to Line.			Carbon to Line.		
Min.	Abs. Res.	Res. per N.M.	Min.	Abs. Res.	Res. per N.M.
1	22·709	7876·0	1	22·628	7848·0
5	68·126	23629·0	5	68·126	23629·0
10	100·57	34881·0	10	100·57	34881·0
15	126·71	43950·0	15	126·71	43950·0
20	145·65	50517·0	20	142·37	49382·0
25	162·45	56346·0	25	154·53	53598·0
30	168·95	58600·0	30	168·95	58600·0

(108 Leclanché Cells employed.)

C.R.

Total C.R. (mean) 1769·0 ohms.

C.R. per N.M. .. 5·1 ..

Temp. of Bridge Coils .. 85°·0 Fhr.

VALUES AT 75° FHR.

Total.			Per N.M.	
C.R.	..	.. 1871·918	5·397	ohms.
Ind. Cap.	..	.. 125·8862	0·3630	microfarads.
D.R.	..	.. 11·220	3892·0	megohms.

PERNAMBUCO—FERNANDO NORONHA SECTION.  
(INDIA RUBBER CORE.)

FINAL GUARANTEE TESTS.

SEPTEMBER 16TH, 1892.

Length=346·845 N.M.

Taken at Fernando Hut by Mr. Bent on behalf of Messrs. Clark Forde, and Taylor.

D.R. in Megohms.					
Zinc to Line.			Carbon to Line.		
Min.	Abs.	Per N.M.	Min.	Abs.	Per N.M.
1	21·77	7558·0	1	22·09	7661·0
5	64·51	22375·0	5	69·15	23984·0
10	93·63	32472·0	10	102·71	35628·0
15	116·26	40325·0	15	127·47	44211·0
20	135·64	47042·0	20	149·01	51683·0
25	153·33	53181·0	25	162·76	56454·0
30	162·8	56454·0	30	173·44	60156·0

(108 Leclanché Cells employed.)

C.R.

Mean of Slide readings=5084.

R.=1800 ohms.

Total C.R. calculated from Slides =1740·5 ohms.

„ reproduced on Bridge Coils=1742·5 „

C.R. per N.M.=5·021 ohms.

Temp. of Coils=86° Fhr.

VALUES AT 75 FHR.

Total.			Per N.M.	
C.R.	..	.. 1871·918	5·397	ohms.
Ind. Cap.	..	.. 125·8862	0·3630	microfarads.
D.R.	..	.. 11·220	3892·0	megohms.

# PERAMBUCO—FERNANDO NORONHA SECTION.

## COMPARISON OF TESTS.

1892.	Factory as core at 75° F.	Factory as completed Sections, Feb. 15th & 25th.	Factory as shipped Sections, April 23rd & 24th.	Ship prior to laying, Aug. 11th.	After submersion. 1st test, Fernando Noronha, Aug. 14th.	After submersion. 2nd test, Fernando Noronha, Aug. 26th.	After submersion. Final guarantee Fernando Noronha, Sept. 16th.	Values calculated from 75° reduced to their equivalents at observed bottom temps.
C.R. Total	..	1871·918	1786·785	1777·396	1908·9	1739·0	1741·5	1731·96
" per N.M.	..	5·397	5·1116	5·1245	5·5036	5·014	5·021	4·9935
Temp. observed	..	75·0	49°·0	49°·5	79°·0	37°·8	37°·8	..
" calculated..	..	75·0	53°·0	50°·0	84°·0	40°·5	40°·5	38°·0
Ind. Cap. Total	..	125·886	128·53	..	..	139·5	..	..
" " per N.M.	..	0·3630	0·3706	..	..	0·4022	..	..
D.R. Total	..	11·220	26·95	28·39	5·4406	23·31	21·77	35·89
" per N.M.	..	39·52·0	9347·3	9846·8	1887·0	8084·0	7558·0	12448·0
" " red. to 75° by C.R. Temp..	..	3982·0	4437·5	4223·0	2559·4	2535·0	2348·1	3556·0
" " " " subdivision of Section	by	..	..	..	..	..	..	..

NOTE.—The last column gives what should be the insulation of the cable after submersion had it maintained its original dielectric resistance at 75°.



EXPENDITURE TABLE.  
1891 INDIA RUBBER CABLE.

Sections.	Types.	Factory Numbers.	Original Lengths as manufactured.	How and where expended.	Lengths as expended.
" 4 "	S.E.	2060	4·00	Laid at St. Louis in the Fernando Noronha— St. Louis Section .. .. .	4·00
" 4A "	H.I.	2061	3·00	Laid at St. Louis in the Fernando Noronha— St. Louis Section .. .. .	2·885
				Splice .. .. .	0·010
				Damaged end .. .. .	0·105
					3·00
				Total accounted for ..	7·00

## EXPENDITURE TABLE.

## 1892 INDIA RUBBER CABLE.

Sections.	Types.	Factory Numbers.	Original Lengths as manufactured.	How and where expended.	Lengths as expended.
" 3 "	S.E.	2146	8.5	Laid at Fernando Noronha in the Pernambuco —Fernando Noronha Section .. ..	1.493
				Laid at Pernambuco in the Pernambuco— Fernando Noronha Section .. ..	6.990
				Splices .. ..	0.008
				Damaged End .. ..	0.002
				Dry Ends .. ..	0.007
					8.5
" 4A "	H.I.	2145	8.0	Laid at Fernando Noronha in the Pernambuco —Fernando Noronha Section .. ..	0.990
				Laid at Pernambuco in the Pernambuco— Fernando Noronha Section .. ..	6.990
				Splices .. ..	0.020
					8.0

## EXPENDITURE TABLE—contd.

## 1892 INDIA RUBBER CABLE—contd.

Sections.	Types.	Factory Numbers.	Original Lengths as manufactured.	How and where expended.	Length as expended.
"2A"	L.I.	2144	16.50	Laid at Fernando Noronha in Fernando Noronha—Pernambuco Section .. .. Laid at Pernambuco in Fernando Noronha—Pernambuco Section .. .. Splices .. .. Abandoned .. .. Recovered cable landed at Pernambuco for land-line work .. .. Recovered cable landed at Fernando Noronha for land-line work .. ..	0.719 14.990 0.020 0.053 0.332 0.386 16.50
"2"	H.D.S.	2143	21.00	Laid at Pernambuco in Pernambuco—Fernando Noronha Section .. .. Splices .. .. Abandoned .. .. Recovered cable landed at Fernando Noronha for land-line work .. .. Recovered cable landed at Pernambuco for land-line work .. .. New cable landed at Pernambuco for land-line work .. ..	17.986 0.024 0.156 0.296 0.853 1.685 21.00

"9"	L.D.S.	2083	178·616	Laid in Pernambuco—Fernando Noronha Section .. .. .	172·321	
				Splices .. .. .	0·034	
				New cable landed at Fernando Noronha for land-line work .. .. .	0·246	
				Remaining on board (new) .. .. .	6·015*	178·616
"11"	L.D.S.	2083	124·384	Laid in Pernambuco—Fernando Noronha Section .. .. .	124·366	
				Splices .. .. .	0·014	
				Dry ends .. .. .	0·004	124·384
				Total manufactured ..	Total accounted for ..	357·000

\* This length on being measured when turned over from "Silvertown" to "International" was found by drum measurement to be = 5·303 N.M.

EXPENDITURE TABLE—*contd.*

1892 INDIA RUBBER CABLE—*contd.*

SUMMARY.

	N.M.
Laid in Pernambuco—Fernando Noronha Section (1)	346·845
Splices .. .. .	0·120
Damaged Ends .. .. .	0·002
Dry Ends and Samples .. .. .	0·011
Abandoned (2).. .. .	0·209
Recovered Cable landed for underground lines (3)..	1·876
New           "       "       "       "       "       " (4)..	1·931
Remaining on board (new) (5)       ..       ..       ..	6·015
	<hr/>
	357·000

REMARKS.

(1) Composed of :—S.E.=	8·483
H.I.=	7·980
L.I.=	15·709
H.D.S.=	17·986
L.D.S.=	296·687
	<hr/>
(2)   Sec. " 2 A " L.I.=	0·053
Sec. " 2 " H.D.S.=	0·156
	<hr/>
(3)   Sec. " 2 A " L.I.=	0·718
Sec. " 2 " H.D.S.=	1·149
	<hr/>
(4)   Sec. " 2 " H.D.S.=	1·685
Sec. " 9 " L.D.S.=	0·246
	<hr/>
(5)   Sec. " 9 " L.D.S.	

FERNANDO NORONHA—ST. LOUIS CABLES.

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GUTTA PERCHA CORE.

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ELECTRICAL PARTICULARS AND SPECIFICATION.

75° VALUES OF COMPLETED SECTIONS.

FINAL TESTS ON COMPLETED SECTIONS.

75° VALUES OF SHIPPED SECTIONS.

FINAL TESTS ON SHIPPED SECTIONS.

75° VALUES OF THE FERNANDO NORONHA—ST. LOUIS  
LAID AND COMPLETED CABLE.

TABLE OF DEPTHS, TEMPERATURES, AND CORRESPONDING  
CABLE LENGTHS (TABLE A).

DETAILS OF SUBDIVISION OF THE LAID AND COMPLETED  
CABLE SHOWING ELECTRICAL VALUES (TABLE B).

FINAL TESTS ON THE LAID AND COMPLETED CABLE.

TABLE A. FIRST TESTS AFTER COMPLETION.

TABLE B. FINAL GUARANTEE TESTS.

COMPARISON OF TESTS ON THE LAID AND COMPLETED  
CABLE.

EXPENDITURE TABLE.





## ELECTRICAL PARTICULARS.

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### SOUTH AMERICAN CABLES.

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#### GUTTA PERCHA CORE.

##### *Conductor.*

7 copper wires stranded.

Diam. each wire =  $0''\cdot042$  ( $0''\cdot0418 - 0''\cdot0415?$ ) No. 19 L.S.G.

„ strand =  $0''\cdot126$  (“*d*”).

Weight per N.M. = 225 lbs.

##### *Core.*

Three coats Silvertown G.P.

Diam. Core =  $0''\cdot3554$  (“*D*”).

Weight per N.M. = 225 lbs. of dielectric.

$\text{Log } \frac{D}{d} = 0\cdot450347.$

Specific Conductor Res. =  $99\cdot9\%$  of that of pure copper.

„ Ind. Cap. =  $0\cdot1613$  (or  $0\cdot0591$  mcfd. in terms of a cube knot).

Specific Dielectric Res. = 1672 megs. (or 456 megs. in terms of a cube knot).

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#### SPECIFICATION.

##### *Conductor.*

Res. at  $75^{\circ}$  F. not to exceed  $5\cdot54$  ohms per N.M.

Conductivity to be not less than  $96\%$  of pure copper.

##### *Core.*

Ind. Cap. not to exceed  $0\cdot375$  mcfd. per N.M.

Dielectric Res. to be not less than 300 megs., at  $75^{\circ}$  F. per N.M., after 1 min. electrification.

Submerged and completed cable to have a Dielectric Res. per N.M., reduced to  $75^{\circ}$  F., of not less than 350 megs. after 5 min.

NOTE.—Actual mean weight Conductor =  $224\cdot52$  lbs per N.M.

„ „ „ Dielectric =  $225\cdot38$  „ „

*Electrical Report.*

GUTTA PERCHA CABLE.

75° VALUES OF COMPLETED SECTIONS.

Sec- tions.	Types and Factory Num- bers.	Lengths N.M.	C.R. (ohms).		Ind. Cap.(mcfd.).		D.R. (megohms).	
			Total.	Per N.M.	Total.	Per N.M.	Abs.	Per N.M.
"5 "	L.D.S. (2147)	230.211	1223.70	5.3155	83.1294	0.3611	3.692	849.0
"9A "	"	234.912	1251.40	5.3273	84.7002	0.3606	3.302	774.0
"11A "	"	232.230	1234.30	5.3148	83.8989	0.3613	3.410	792.0
"6 "	"	236.308	1256.90	5.3190	85.5445	0.3620	3.459	816.0
"10 "	"	106.058	564.165	5.3193	38.3884	0.3620	7.322	777.0
"7 "	"	220.351	1171.70	5.3175	79.5148	0.3609	3.556	782.0
"9B "	"	53.142	283.343	5.3318	18.9126	0.3559	10.24	543.0
"3A "	S.E. (2151)	1.500	7.967	5.3113	0.5161	0.3441	259.0	389.0
"1 "	H.D.S. (2148)	19.000	101.11	5.3219	6.7892	0.3573	30.90	587.0
"11B "	L.D.S. (2147)	143.839	765.34	5.3207	50.6517	0.3521	4.50	646.0
"5A "	"	144.137	765.95	5.3140	50.5339	0.3506	4.787	689.0
"4B "	H.I. (2150)	6.000	31.903	5.3170	2.1202	0.3534	108.0	648.0
"4C "	L.I. (2149)	17.500	93.556	5.3460	6.0905	0.3480	37.600	658.0
"7A "	L.D.S. (2147)	160.312	853.82	5.3260	55.9380	0.3489	4.339	695.0

GUTTA PERCHA CABLE.

FINAL TESTS ON COMPLETED SECTIONS.

Date, 1892.	Section.	Type.	Factory Number.	Length. N.M.	C.R. Observed.		Temps. F.		Ind. Cap. Observed.		D.R. Observed.			Percentage of improvement in Electrification at 30 min.
					Total.	Per N.M.	Obsvd.	Calc.	Total.	Per N.M.	Abs.	Per N.M.	Per N.M. Red. to 75° by C. R. Temp.	
Feb. 7.....	"5"	L.D.S.	2147	230-211	1160-32	5-040	49-0	49-5	83-678	0-3635	45-485	10471-1	1069-30	78-52
" 8.....	"9A"	"	2147	234-912	1188-30	5-059	52-5	50-25	85-826	0-3653	33-262	7813-4	853-30	86-85
" 9.....	"11A"	"	2147	232-23	1172-30	5-048	52-0	50-5	84-56	0-3641	40-188	9332-8	953-08	68-52
" 10.....	"6"	"	2147	236-308	1194-28	5-054	55-0	50-5	86-425	0-3657	37-167	8782-8	980-85	62-46
" 16.....	"10"	"	2147	106-058	537-61	5-0689	47-0	52-0	38-126	0-3595	85-21	9037-6	1154-30	53-64
" 17.....	"7"	"	2147	220-351	1110-45	5-0393	42-5	49-25	79-873	0-3633	44-664	9841-0	982-75	80-18
" 26.....	"9B"	"	2147	53-142	269-500	5-0713	51-0	51-0	18-848	0-3546	98-910	5256-3	613-88	41-35
March 1.....	"3A"	S.E.	2151	1-500	7-590	5-060	54-0	51-5	0-5219	0-3480	2014-0	3028-0	369-8	56-10
" 3.....	"1"	H.D.S.	2148	19-000	95-80	5-0305	53-0	49-25	6-8417	0-3593	315-03	5999-0	599-08	48-00
April 3.....	"11B"	L.D.S.	2147	143-839	726-78	5-0527	50-0	50-25	51-099	0-3552	53-383	7679-0	838-62	46-30
" 5.....	"5A"	"	2147	144-137	731-00	5-0716	58-0	52-75	50-418	0-3498	44-472	6410-1	875-51	41-50
" 7.....	"4B"	H.I.	2150	6-000	30-55	5-0916	61-0	54-5	2-1269	0-3545	789-43	4736-6	756-6	35-80
" 8.....	"4C"	L.I.	2149	17-500	90-16	5-1534	62-0	57-25	6-0593	0-3483	205-48	3595-8	734-6	38-00
" 11.....	"7A"	L.D.S.	2147	160-312	820-23	5-1162	55-0	55-75	57-079	0-3560	35-784	5737-0	1024-9	41-00

## GUTTA APERCH CABLE.

## VALUES AT 75° F. OF SHIPPED SECTIONS.

Tank.	Factory Section.	Type.	Length of each type.	Lengths as spliced up.	C.R.		Ind. Cap.		D.R.		Order of Coils.
					Total.	Per N.M.	Total.	Per N.M.	Abs.	Per N.M.	
Main "M. 3"	pt. "4c"	L.I.	16-000	32-990	85-464	5-346	5-5651	0-3479	41-4	662-0	Top. Bottom. 689-pt. 714
	pt. "1"	H.D.S.	16-990		90-438	5-325	6-0821	0-3581	34-7	590-0	478-pt. 543
			32-990		175-902	5-332	11-6472	0-3530	18-87	622-0	
Main "M. 2"	"7A"	L.D.S.	160-298	795-326	853-75	5-326	56-0669	0-3498	4-339	695-0	529-pt. 715
	"5A"	"	144-115		765-77	5-314	50-3263	0-3507	4-78	689-0	476-705
	"11B"	"	143-828		765-27	5-3207	50-6478	0-3521	4-50	646-0	503-668
	pt. "7"	"	214-459		1140-40	5-3175	77-4231	0-3610	3-705	795-0	7-pt. 517
	pt. "10"	"	79-510		423-38	5-325	28-771	0-3618	9-91	788-0	342-pt. 489
	"9B"	"	53-116		283-20	5-3318	13-9032	0-3559	10-24	543-0	488-555
			795-326		4231-77	5-3209	282-3383	0-3550	0-8849	703-79	

# Electrical Report.

Main "M. 1"	pt. "5"	L.D.S.	79-890	79-890	424-96	5-3192	28-796	0-3604	10-563	844	
After "A. 3"	pt. "4a"	H.I.	5-000	5-000	26-632	5-326	1-7647	0-3530	129-0	645-0	687-pt. 688
{	pt. "3a"	S.E.	1-500	{	7-967	5-312	0-5161	0-3441	259-0	389-0	434
	pt. "4b"	H.I.	0-990		5-2918	5-344	0-352	0-3555	671-0	665-0	pt. 688-pt. 689
	pt. "4c"	L.I.	1-490		7-9737	5-352	0-5218	0-3503	419-0	624-0	pt. 714-pt. 548
	pt. "1"	H.D.S.	1-990		10-575	5-313	0-6999	0-3518	283-0	563-0	pt. 513-pt. 548
	pt. "5"	L.D.S.	145-662		773-952	5-3136	52-6593	0-3614	5-858	853-0	pt. 296-11
	pt. "6"	"	236-270		1256-71	5-319	85-5305	0-362	3-459	817-0	pt. 470-8
	pt. "7"	"	5-846		31-1327	5-3253	2-08	0-3558	88-65	519-0	534-517
{	pt. "10"	"	26-537	{	140-7276	5-3031	9-6132	0-3623	28-06	745-0	pt. 489-500
	pt. "9a"	"	234-879		1251-27	5-3273	84-688	0-3606	3-302	774-0	53-486
	pt. "11a"	"	232-219		1234-21	5-3148	83-895	0-3612	3-408	791-0	25-481
			887-383		4719-8098	5-3189	320-5558	0-36123	0-8975	796-42	

GUTTA PERCHA CABLE.

FINAL TESTS ON SHIPPED SECTIONS.

Date.	Tank.	Length.	C.R. Observed.		Temperatures.		D.R. Observed.			Improvement electrification per cent. at 30 min.
			Total.	Pr. N.M.	Obsvd.	Calc.	Abs.	Pr. N.M.	Pr. N.M. Rd. to 75°.	
April 20th	{ Main "M. 2." }	795·326	4010·55	5·043	48°	49°·5	10·37	8246·0	842·1	62·5
April 20th	{ Main "M. 1." }	79·89	401·65	5·022	48°	48°	148·3	11860·0	1058·7	93·5
April 22nd	{ Main "M. 3." }	32·990	167·40	5·0743	48°	51°·5	224·47	7405·1	904·4	47·5
April 21st	{ After "A. 1." }	887·383	4431·56	4·9940	47°·5	45°	13·638	12102·0	826·2	133·5
April 22nd	{ After "A. 3." }	5·000	25·20	5·040	49°	48°·5	487·3	7436·2	694·4	40·5 15 min.

## FERNANDO NORONHA—ST. LOUIS SECTION.

## VALUES AT 75° F., DEPTHS, POSITIONS OF SPLICES, &amp;c.

Types.	Sections.	Factory Num- bers.	Lengths N.M.	C.R.		Ind. Cap.		D.R.		SPICES.				
				Total.	Per N.M.	Total.	Per N.M.	Abs.	Per N.M.	Depths at Splices, fms.	Positions.		Splices between	
											Lat. S.	Long. W.		
S.E.	"3A"	2151	1 500	7 9670	5 3120	0 5161	0 3441	259 0	389	30	° 3 ' 50 0	° 32 ' 25 2	Position Fernando Noronha Hut.	Aug. 31st.
H.I.	"4B"	2150	0 990	5 2918	5 3440	0 3520	0 3555	671 0	665	50	° 3 ' 47 7	° 32 ' 25 7	S.E. and H.I.	"
L.I.	"4C"	2149	1 490	7 9737	5 3520	0 5218	0 3503	419 0	624	250	° 3 ' 46 6	° 32 ' 24 9	H.I. and L.I.	"
H.D.S.	"1"	2148	1 990	10 5750	5 3130	0 6999	0 3518	283 0	563	950	° 3 ' 45 2	° 32 ' 23 3	L.I. and H.D.S.	"
L.D.S.	"5"	2147	145 662	773 9520	5 3136	52 6545	0 3614	5 858	853	2500	° 2 ' 2 9 North.	° 31 ' 2 9 West.	H.D.S. and L.D.S.	Sept. 1st.
"	"6"	"	236 270	1256 7100	5 3190	85 5305	0 3620	3 459	817	1900	° 0 ' 18 1	° 28 ' 26 3	L.D.S. and L.D.S.	" 3rd.
"	"7"	"	5 846	31 1327	5 3253	2 0800	0 3553	88 65	519	2000	° 0 ' 22 7	° 28 ' 23 0	"	"
"	"10"	"	26 537	140 7276	5 3031	9 6132	0 3623	28 06	745	1900	° 0 ' 43 0	° 28 ' 28 8	"	"
"	"9A"	"	234 879	1251 2700	5 3273	84 6880	0 3606	3 302	774	2250	° 3 ' 40 4	° 26 ' 6 0	"	" 4th.
"	"11A"	"	232 199	1234 1053	5 3148	83 8879	0 3612	3 408	791	2300	° 6 ' 28 6	° 23 ' 54 5	"	" 5th.
"	"7A"	"	160 294	853 7291	5 3260	56 0655	0 3498	4 339	695	2450	° 8 ' 26 7	° 22 ' 32 3	"	" 6th.
"	"5A"	"	144 115	765 7700	5 3140	50 5263	0 3507	4 780	689	2750	° 10 ' 16 7	° 21 ' 18 7	"	" 7th.
"	"11B"	"	143 828	765 2700	5 3207	50 6478	0 3521	4 500	646	2650	° 12 ' 7 1	° 20 ' 6 4	"	"



FERNANDO NORONHA—ST. LOUIS SECTION—*contd.*VALUES AT 75° F., DEPTHS, POSITIONS OF SPLICES, &c.—*contd.*

Types.	Sec- tions.	Factory Num- bers.	Lengths. N.M.	C.R.		Ind. Cap.		D.R.		SPLICES.			Splices between		
				Total.	Per N.M.	Total.	Per N.M.	Abs.	Per N.M.	Depths at Splices, fms.	Positions.				
											Lat. S.	Long. W.			
L.D.S.	" 7 "	2147	214.459	1140.4000	5.3175	77.4181	0.3610	3.705	795	1500	14 46.3	18 16.2	L.D.S. and L.D.S.	Sept.	8th.
"	" 10 "	"	79.510	423.3800	5.3250	28.7710	0.3618	9.910	788	900	15 41.2	17 29.6	" "	"	9th.
"	" 9B "	"	27.877	148.0646	5.3114	9.9665	0.3575	19.955	556.4	700	15 55.0	17 9.0	L.D.S. FINAL SPLICE.	"	11th.
"	" 9B "	"	3.804	20.2290	5.3178	1.3448	0.3535	121.750	463.0	700	15 57.27	17 6.7	L.D.S.	"	"
H.D.S.	" 1 "	2148	13.030	69.3890	5.3250	4.6645	0.3581	45.25	590	235	16 1.2	16 57.2	H.D.S. and L.D.S.	"	"
L.I.	" 4C "	2149	15.990	85.412	5.3420	5.5615	0.3479	41.4	662	33	16 3.0	16 42.6	L.I. and H.D.S.	May	16th.
H.I.	" 4B "	2150	4.992	26.5900	5.3260	1.7619	0.3530	129.2	645	21	16 3.1	16 37.6	H.I. and L.I.	"	15th.
H.I.*	" 4A "	2061	2.885	16.9350	5.3700	1.0590	0.3672	2040.0	5884.0	9	16 3.0	16 34.6	H.I. and H.I.	"	"
S.E.*	" 4 "	2063	4.000	23.4800	5.3700	1.4687	0.3672	1262.0	5048.0	16	16 1.6	16 31.0	S.E. and H.I.	Oct.	7th, 1891.
			1702.147	9058.328	5.3217	609.7995	0.35825	0.4424	753.0				Pos. St. Louis Hut.		

\* India-rubber core.

FERNANDO NORONHA—ST. LOUIS SECTION.

TABLE OF DEPTHS, TEMPERATURES, AND CORRESPONDING  
CABLE LENGTHS, SHOWING SUBDIVISION OF SECTION.

TABLE A.

Preparatory Selection.				Subdivision into Groups.			F. Noronha End.
Cable as laid.	Depths.	Corresponding bottom Temps.	Corresponding Lengths.	Mean Depths.	Mean bottom Temps.	Corre- sponding Lengths.	
N.M.	fms.	F.	N.M.	fms.	F.	N.M.	
3	25	72°·0	3	25	72°·0	3	
4	150	55°·0	1	450	45°·6	3	
6	600	41°·0	2				
26	1600	36°·5	20	1600	36°·5	20	
136	2400	34°·0	110	2286	34°·28	1085	
186	2500	33°·75	50				
211	2600	33°·5	25				
236	2400	34°·0	25				
336	2300	34°·25	100				
436	1950	35°·0	100				
526	2000	35°·0	90				
576	2300	34°·25	50				
666	2250	34°·25	90				
896	2300	34°·25	230				
946	2000	35°·0	30				
1111	2450	34°·0	165				

FERNANDO NORONHA—ST. LOUIS SECTION—*contd.*

TABLE OF DEPTHS, TEMPERATURES, AND CORRESPONDING  
CABLE LENGTHS, SHOWING SUBDIVISION OF SECTION.

TABLE A—*contd.*

Preparatory Selection.				Subdivision into Groups.		
Cable as laid.	Depths.	Corresponding bottom Temps.	Corresponding Cable Lengths.	Mean Depths.	Mean bottom Temps.	Corresponding Lengths.
N.M.	fms.	F.	N.M.	fms.	F.	N.M.
1146	2750	33°·25	35	2638	33°·48	300
1171	2800	33°·0	25			
1256	2750	33°·25	85			
1336	2650	33°·5	80			
1371	2500	33°·75	35			
1411	2300	34°·25	40	1775	35°·77	191
1506	2000	35°·0	95			
1562	1700	36°·0	56			
1582	1400	37°·0	20			
1602	1300	37°·5	20			
1622	1000	39°·5	20	544	47°·2	100·147
1642	800	40°·5	20			
1657	700	41°·0	15			
1667	500	43°·5	10			
1677	200	54°·0	10			
1687	50	60°·0	10			
1702·147	25	62°·0	15·147			
Total Means.	2172	35°·0	1702·147	2172	35°·0	1702·147

St. Louis End.

TO ACCOMPANY TABLE A. FERNANDO NORONHA-ST. LOUIS SECTION. TABLE B.

DETAILS OF SUBDIVISION OF SECTION SHOWING ELECTRICAL VALUES.

Mean Depths.	Obsd. Mean Bottom Temps. F.	Cable Lengths			Values at 75° F.						Calculated Values reduced to observed bottom temps. from the 75° Values.		
		Corres-ponding to Depths and Temps. N.M.	Composed of		C.R.		Ind. Cap.		D.R.		C.R.		D.R.
fms.			Types	Sections	Lengths. N.M.	Total.	Per N.M.	Total.	Per N.M.	Abs.	Total.	Per N.M.	Abs.
25	72°	3-0	{ S.E. H.I. L.I.	{ " 3A " " 4A " " 4C "	{ 1-5 0-99 0-51	{ 15-9884 15-9797 15-9797	{ 5-3306 5-3264 5-3136	{ 1-045 1-0558 7-0983	{ mcfd. mcfd. 0-3549	{ 162-1 195-9 42-65	{ 15-888 15-016 98-051	{ 5-2961 5-0054 4-9026	{ 212-01 2743-8 1336-5
450	45°-6	3-0	{ L.I. H.D.S. L.D.S.	{ " 4C " " 1 " " 5 "	{ 0-98 1-99 0-03	{ 15-9797 15-9797 15-9797	{ 5-3264 5-3264 5-3136	{ 1-0558 1-0558 7-0983	{ mcfd. mcfd. 0-3549	{ 195-9 195-9 42-65	{ 15-016 15-016 98-051	{ 5-0054 5-0054 4-9026	{ 2743-8 2743-8 1336-5
1600	36°-5	20-0	{ L.D.S. " " " " " " " " " "	{ " 5 " " 6 " " 7 " " 10 " " 9A " " 11A " " 7A " " 5A "	{ 125-632 236-270 5-846 26-537 234-879 232-199 160-294 63-343	{ 106-27 106-27 106-27 106-27 106-27 106-27 106-27 106-27	{ 5-3136 5-3136 5-3136 5-3136 5-3136 5-3136 5-3136 5-3136	{ 7-0983 7-0983 7-0983 7-0983 7-0983 7-0983 7-0983 7-0983	{ mcfd. mcfd. mcfd. mcfd. mcfd. mcfd. mcfd. mcfd.	{ 42-65 42-65 42-65 42-65 42-65 42-65 42-65 42-65	{ 98-051 98-051 98-051 98-051 98-051 98-051 98-051 98-051	{ 4-9026 4-9026 4-9026 4-9026 4-9026 4-9026 4-9026 4-9026	{ 1336-5 1336-5 1336-5 1336-5 1336-5 1336-5 1336-5 1336-5
2286	34°-28	1085-0	{ L.D.S. " " " " " " " " " " " "	{ " 5 " " 6 " " 7 " " 10 " " 9A " " 11A " " 7A " " 5A "	{ 125-632 236-270 5-846 26-537 234-879 232-199 160-294 63-343	{ 5772-02 5772-02 5772-02 5772-02 5772-02 5772-02 5772-02 5772-02	{ 5-3198 5-3198 5-3198 5-3198 5-3198 5-3198 5-3198 5-3198	{ 389-814 389-814 389-814 389-814 389-814 389-814 389-814 389-814	{ 0-3593 0-3593 0-3593 0-3593 0-3593 0-3593 0-3593 0-3593	{ 0-7127 0-7127 0-7127 0-7127 0-7127 0-7127 0-7127 0-7127	{ 5305-4 5305-4 5305-4 5305-4 5305-4 5305-4 5305-4 5305-4	{ 4-8847 4-8847 4-8847 4-8847 4-8847 4-8847 4-8847 4-8847	{ 27-315 27-315 27-315 27-315 27-315 27-315 27-315 27-315

TABLE B.  
 TO ACCOMPANY TABLE A.  
 FERNANDO NORONHA—ST. LOUIS SECTION—*contd.*

DETAILS OF SUBDIVISION OF SECTION SHOWING ELECTRICAL VALUES—*contd.*

Mean Depths.	Obsd. Mean Bottom Temps. F.	Cable Lengths			Values at 75° F.						Calculated Values reduced to observed bottom temps. from the 75° Values.		
		Corresponding to Depths and Temps. N.M.	Composed of		C.R.		Ind. Cap.		D.R.		C.R.		D.R.
			Types	Sections	Lengths. N.M.	Total.	Per N.M.	Total.	Per N.M.	Abs.	Total.	Per N.M.	
2638	33°-48	{ 300-0	L.D.S. " " " "	" 5A " " 11B " " 7 "	80-772 143-828 75-400	1594-26	5-3143	106-135	0-3539	megs. 2-295	1463-7	4-8789	28218-0
1775	35°-77		L.D.S. " "	" 7 " " 10 "	139-059 51-941	1016-05	5-3194	68-704	0-3595	megs. 4-152	939-86	4-9208	26376-0
544	47°-2	{ 100-147	L.D.S. " " " "	" 10 " " 9B " " 9B "	27-569 27-877 3-804	537-646	5-3697	35-947	0-3590	megs. 6-730	507-35	5-0659	8072-0
St. Louis END.			H.D.S. L.I. H.I. " 4A " " 4 "	" 1 " " 4C " " 4B " " 4A " " 4 "	13-03 15-990 4-992 2-885 4-000								
2176	35°-0	1702-147	...	...	1702-147	9058-328	5-3217	609-799	0-3582	0-4424	8345-265	4-9029	23392-0

\* India-rubber cable.

FERNANDO NORONHA—ST. LOUIS SECTION.  
(GUTTA PERCHA CORE.)

FIRST TESTS AFTER COMPLETION.

SEPTEMBER 11TH, 1892.

Length=1702·147 N.M.

Taken at Fernando Hut by Mr. Bent on behalf of Messrs. Clark, Forde,  
and Taylor. (Mr. Schneider present.)

D.R. in Megohms.

Zinc to Line.			Carbon to Line.		
Min.	Abs. Res.	Res. per N.M.	Min.	Abs. Res.	Res. per N.M.
1	8·026	13661·0	1	8·163	13895·0
5	25·914	44110·0	5	25·510	43423·0
10	41·408	70483·0	10	31·056	52864·0
15	48·437	82430·0	15	57·143	97266·0
20	57·143	97266·0	20	56·023	95360·0
25	57·143	97266·0	25	58·310	99252·0
30	57·143	97266·0	30	60·791	103480·0
35	59·524	101320·0	35	60·791	103480·0
40	68·028	115790·0	40	62·112	105720·0
45	79·366	135090·0	45	63·493	108070·0
50	89·287	151980·0	50	81·634	138950·0
55	92·167	156880·0	55	89·287	151980·0
60	98·525	167710·0	60	95·240	162110·0

Earth currents moderate.  
(108 Leclanché Cells employed.)

C.R.

Mean of Slide readings=5201·5.

R.=9000 ohms.

Total C.R. calculated from Slides =8304·4 ohms.

„ reproduced in Bridge Coils=8307·0 „

C.R. per N.M.=4·880 ohms.

Temp. of Bridge Coils=84°·0 Fhr.

VALUES AT 75° FHR.

		Total.	Per N.M.
C.R.	.. ..	9058·328	5·3217 ohms.
Ind. Cap.	.. ..	609·7995	0·35825 microfarads.
D.R.	.. ..	0·4424	753·0 megohms.

FERNANDO NORONHA—ST. LOUIS SECTION.  
(GUTTA PERCHA CORE.)

FINAL GUARANTEE TESTS.

SEPTEMBER 16TH, 1892.

Length=1702·147 N.M.

Taken at Fernando Hut by Mr. Bent, on behalf of Messrs. Clark, Forde, and Taylor. (Mr. Schneider present.)

D.R. in Megohms.

Zinc to Line.			Carbon to Line.		
Min.	Abs. Res.	Res. per N.M.	Min.	Abs. Res.	Res. per N.M.
1	8·511	14487·0	1	8·473	14482·0
5	37·78	64307·0	5	30·23	51451·0
10	54·25	92349·0	10	39·19	66697·0
15	46·20	78638·0	15	53·43	90951·0
20	115·0	195740·0	20	56·88	96818·0
25	53·43	90950·0	25	56·28	95788·0
30	182·4	310410·0	30	64·12	109140·0
35	81·38	138520·0	35	68·26	116180·0
40	72·96	124800·0	40	71·97	122500·0
45	70·07	119260·0	45	75·57	128630·0
50	82·01	139600·0	50	69·15	117700·0
55	75·03	127700·0	55	74·51	126820·0
60	80·76	137470·0	60	84·64	144060·0

NOTE.—Earth currents very strong and variable.  
(108 Leclanché Cells employed.)

C.R.

Mean of Slide readings=5199.

R.=9000 ohms.

Total C.R. calculated from Slides =8311 ohms.

„ reproduced in Bridge Coils=8307 „

C.R. per N.M.=4·8796 ohms.

Temp. of Coils=86°·0 Fhr.

VALUES AT 75° FHR.

	Total.	Per N.M.
C.R. .. ..	9058·328	5·3217 ohms.
Ind. Cap. .. ..	609·7995	0·35825 microfarads.
D.R. .. ..	0·4424	753·0 megohms.



FERNANDO NORONHA—ST. LOUIS SECTION.

COMPARISON OF TESTS.

	Factory as completed Sections, Feb., Mar., & April, 1892.	Factory as shipped Sections, Apr. 20th & 21st, 1892.	Ship prior to laying, Aug. 22nd, 1892.	F. Noronha Hut. After subversion 1st Test, Sept. 11th, 1892.	F. Noronha Hut. Final guarantee, Sept. 16th, 1892.
C.R. total ...	9058·328	8628·489	8538·7	9168·3	8343·0
„ per N.M. ...	5·3217	5·0709	5·0170	5·3866	4·901
Temp. observed F. ...	75°·0	51°·0	47°·75	79°·0	35°·0
„ calculated F. from C.R. ...	75°·0	52°·0	47°·0	81°·0	36°·5
Ind. Cap. total ...	609·7995	612·956	...	...	...
„ „ per N.M. ...	0·3582	0·36023	...	...	...
D.R. Abs. ...	0·4424	4·346	6·074	0·4983	8·5224
„ „ ...	...	...	...	...	23·386
„ „ ...	...	...	...	...	46·779
„ „ ...	...	...	...	...	14506·0
„ „ ...	753·0	7395·1	10338·0	848·15	38904·0
„ „ ...	...	...	...	...	79622·0
„ „ ...	...	...	...	...	...
„ „ reduced to 75° from C.R. Temp. 1st	753·0	944·5	844·1	1450·9	449·34
„ „ „ „ „ 5th	...	...	...	...	1374·9
„ „ „ „ „ 10th	...	...	...	...	1914·3

NOTE.—Calculating the 1st min. from the 5th, the D.R. Abs. 1st min. would be 14·11 megs., and per N.M. 24016·0 megs. The D.R. per N.M. reduced to 75° by the new coefficient tables would be 743·28 megs.; if reduced by the 1881 coefficient tables it would be 1216·4 megs.

# EXPENDITURE TABLE.

## GUTTA PERCHA CABLES.

Section.	Type.	Factory Number.	Original Length as manufactured.	How and where expended.	Lengths as expended.
"3"	S.E.	2151	1.50	Laid at Fernando Noronha for the Fernando Noronha—St. Louis Section .. ..	1.50
"4B"	H.I.	2150	6.00	Laid at Fernando Noronha for the Fernando Noronha—St. Louis Section .. .. Laid at St. Louis for the Fernando Noronha—St. Louis Section .. .. Splices .. ..	0.990 4.992 0.018
"4C"	L.I.	2149	17.50	Laid at Fernando Noronha for the Fernando Noronha—St. Louis Section .. .. Laid at St. Louis for the Fernando Noronha—St. Louis Section .. .. Splices .. ..	1.490 15.990 0.020
					1.50 6.00 17.50

' 1 "	H.D.S.	2148	19 00	Laid at Fernando Noronha for the Fernando Noronha—St. Louis Section .. .. .	1 990
				Laid at St. Louis for the Fernando Noronha—St. Louis Section .. .. .	13 030
				Splices .. .. .	0 020
				Damaged end .. .. .	0 002
				Abandoned .. .. .	3 958
					19 00
" 5 "	L.D.S.	2147	230 211	Laid in Fernando Noronha—St. Louis Section	145 662
				*Splices .. .. .	0 322
				†Damaged .. .. .	4 326
				Samples .. .. .	0 011
				Remaining on board (new) .. .. .	79 890
					230 211
" 5A "	L.D.S.	2147	144 137	Laid in Fernando Noronha—St. Louis Section	144 115
				Splices .. .. .	0 014
				Dry ends and samples .. .. .	0 008
					144 137

\* Expended at works in splicing up after repairs to damaged cable.

† Damaged on board, off works, by fire.

# EXPENDITURE TABLE—contd.

## GUTTA PERCHA CABLES—contd.

Section.	Type.	Factory Number.	Original Length as manufactured.	How and where expended.	Lengths as expended.
"6"	L.D.S.	2147	236·308	Laid in Fernando Noronha—St. Louis Section	236·270
				Splices .. ..	0·028
				Dry ends and samples ..	0·010
					236·308
"7"	L.D.S.	2147	220·851	Laid in Fernando Noronha—St. Louis Section	220·305
				Splices .. ..	0·042
				Damaged end .. ..	0·004
					220·351
"7A"	L.D.S.	2147	160·312	Laid in Fernando Noronha—St. Louis Section	160·294
				Splices .. ..	0·014
				Damaged end .. ..	0·004
					160·312

" 9A "	L.D.S.	2147	234·912	Laid in Fernando Noronha—St. Louis Section	234 879	234·912
				Splices .. ..	0·028	
				Dry end .. ..	0·005	
" 9B "	L.D.S.	2147	53·142	Laid in Fernando Noronha—St. Louis Section	31·681	53·142
				Splices .. ..	0·036	
				Damaged end .. ..	0·006	
				Dry ends and samples .. ..	0·012	
				Remaining on board .. ..	21·407	
" 10 "	L.D.S.	2147	106·058	Laid in Fernando Noronha—St. Louis Section	106·047	106·058
				Samples .. ..	0·011	

EXPENDITURE TABLE—*contd.*GUTTA PERCHA CABLES—*contd.*

Section.	Type.	Factory Number	Original Length as manufactured.	How and where expended.	Lengths as expended.
" 11A "	L.D.S.	2147	232·23	Laid in Fernando Noronha—St. Louis Section	232·199
				Splices .. .. .	0·014
				Dry ends and samples .. .. .	0·017
					232·220
" 11B "	L.D.S.	2147	143·839	Laid in Fernando Noronha—St. Louis Section	143·828
				Samples .. .. .	0·011
				Total accounted for ..	
Total manufactured..					1805·500

EXPENDITURE TABLE—*contd.*

GUTTA PERCHA CABLES—*contd.*

SUMMARY.

Laid in Fernando Noronha—St. Louis Section (1)	1695·262
Splices (2) .. .. .	0·556
Damaged (3) .. .. .	4·342
Dry ends and samples .. .. .	0·085
Abandoned (4) .. .. .	3·958
Remaining on board (New) (5) .. .. .	101·297
	<hr/>
	1805·500
	<hr/>

REMARKS.

(1) Composed of S.E.	1·500	N.M
„ H.I.	5·982	„
„ L.I.	17·480	„
„ H.D.S.	15·020	„
„ L.D.S.	1655·280	„

(2) 0·322 N.M. of L.D.S., Sec. “5,” expended in factory in splicing up damaged cable.

(3) 4·326 N.M. of L.D.S., Sec. “5,” damaged by fire on board “Silvertown” off works.

(4) H.D.S., Sec. “1,” abandoned during completion of section off St. Louis.

(5) Composed of L.D.S., Sec. “5”	=	79·890
L.D.S., Sec. “9B”	=	21·407





## ELECTRICAL REPORT.

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### UNDERGROUND CABLES.

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VALUES AT 75°, AND FACTORY TESTS.

MECHANICAL PARTICULARS.

LENGTHS FOR EACH STATION.

WEIGHTS FOR EACH STATION.

PERNAMBUCO UNDERGROUND CABLES.

VALUES AT 75° F.

TESTS AFTER COMPLETION.

FERNANDO NORONHA UNDERGROUND CABLES.

VALUES AT 75° F.

TESTS AFTER COMPLETION.

ST. LOUIS UNDERGROUND CABLES.

TESTS AFTER COMPLETION.



# FACTORY TESTS ON INDIA RUBBER UNDERGROUND CABLES.

(Delivered on Drums.)

## SOUTH AMERICAN TELEGRAPH CO.'S LAND LINES.

VALUES AT 75° FHR.

Whole length prior to cutting and coiling on drums.

Length.	C.R.		Temps.		Ind. Cap.		D.R.		
	Total.	Pr. N.M.	Obsvd.	Calc.	Total.	Pr. N.M.	Abs.	Pr. N.M.	Pr. N.M. Red. to 75° F.
6·50	35·159	5·409	75°	75°	2·507	0·3857	894·0	5811·0	5811·0

## FACTORY TESTS ON COMPLETED CABLE.

Whole length prior to cutting and coiling on drums. March 29, 1892.

Length.	C.R.		Temps.		Ind. Cap.		D.R.		
	Total.	Pr. N.M.	Obsvd.	Calc.	Total.	Pr. N.M.	Abs.	Per N.M. at 52°.	Pr. N.M. Red. to 75° F.
6·50	33·53	5·158	51°	52°	2·750	0·4230	1868·0	12142·0	4400·0

## FACTORY TESTS ON DRUMMED CABLE.

After cutting and coiling on drums. April 6, 1892.

Length.	C.R.		Temps.		Ind. Cap.		D.R.			
	Total.	Pr. N.M.	Obsvd.	Calc.	Total.	Per N.M.	Abs.	Per N.M. at 58°.	Pr. N.M. Red. to 75°.	
0·250	1·31	5·24					43899·0	11000·0	6185·6	St. Louis.
0·500	2·60	5·20			0·2299	0·4598	12570·0	6285·0	3534·2	F. Noronha
0·500	2·56	5·12			0·2186	0·4373	12570·0	6285·0	3534·2	"
0·500	2·56	5·12			0·2056	0·4112	13538·0	6769·0	3806·4	"
0·500	2·58	5·16			0·2056	0·4112	16000·0	8000·0	4498·0	"
0·500	2·63	5·26			0·2074	0·4149	16000·0	8000·0	4498·0	"
1·250	6·59	5·27			0·5551	0·4441	13539·0	16923·0	9516·4	Pernam- buco.
1·250	6·52	5·21			0·5495	0·4396	11000·0	13750·0	7732·0	"
1·250	6·59	5·27			0·5383	0·4306	8800·0	11000·0	6185·6	"
	33·94			53°·0						

# INDIA RUBBER UNDERGROUND CABLE.

*(Delivered on Drums.)*

## MECHANICAL PARTICULARS.

### *Conductor.*

7 tinned copper wires, stranded. Weight per N.M.=225 lbs.  
Diam. each wire=0"·0415. Diam. strand=0"·126.

### *Core.*

$\frac{13209}{30}$  I.R. Weight per N.M.=225 lbs.

Diam. to I.R.=0"·3175. Diam. to tape=0"·354.

Inner covering: Hemp tape served with tanned jute.

Sheathing: 16 galv. B.B. iron wires. Diam. each wire=0"·120.

Each wire pickled in compound.

Outer covering: 2 coats of compound and 2 layers of hemp tape.

External diam.: 0"·917.

Weight about: 2·50 tons per N.M.

Capacity: 27·92 cubic ft. per N.M.

### *Lengths provided for each Station.*

STATION.		NO. OF DRUMS.	LENGTH	TOTAL LENGTH
			ON EACH DRUM.	FOR STATION.
Pernambuco	..	3	1·25 N.M.	3·75 N.M.
Fernando Noronha	..	5	0·50 "	2·50 "
St. Louis	..	1	0·25 "	0·25 "

### *Weights.*

FOR STATION.	EACH DRUM.				TOTAL WEIGHT EACH STATION.			
	Tons.	cwt.	qrs.	lbs.	Tons.	cwt.	qrs.	lbs.
Pernambuco	3	7	3	2	10	3	1	6
Fernando Noronha	1	7	3	0	6	18	3	0
St. Louis..	0	14	1	12	0	14	1	12

## TESTS ON INDIA RUBBER UNDERGROUND CABLES.

## AT PERNAMBUCO.

## UNDERGROUND CABLE ON DRUMS.

Tests on cable from drums prior to completion of Underground Lines and after cutting, part of cable being laid in trench and part coiled on drums.

August 6th, 8th, and 9th, 1892.

No. of Land Line.	Position.	Length N.M.	Abs. D.R. Megs.
No. 1	Portion in trench	0·5372	13·873
	„ on drum	0·7128	0·1209
		1·2500	
No. 2	Portion in trench	0·5372	1·06
	„ on drum	0·7128	0·871
		1·2500	
No. 3	Portion in trench	0·5372	1·08
	„ on drum	0·7128	3·985
		1·2500	

## TESTS AFTER COMPLETION OF LAND LINES.

August 21st, 1892.

After completion of Underground Lines the cables were again tested; but the Lines Nos. 1, 2, and 3 were found to be so faulty that no results could be obtained for capacity or insulation.

The total C.R. of No. 1 Line=5·985 ohms; of No. 2=5·965 ohms; and of No. 3=6·025 ohms.

*Length.*

There is some doubt as to the length of these cables. Mr. Bailey made length 1·0942 N.M.; Mr. Rymer-Jones made it 1·1567 N.M. by capacity and C.R. tests; another estimate obtained from capacity test gives a length of 1·2132 N.M. By Chart measurement the length of trench is 1·0155 N.M., and the length of cable is given as 1·024 N.M. All tests point to a longer length than that given by chain or chart measurements.

TESTS ON INDIA RUBBER UNDERGROUND  
CABLES.—*contd.*

PORTIONS OF MAIN SECTIONS (NEW CABLE).

*Ex "Silvertown."*

VALUES AT 75°.

Ship Section.	Type.	No. of Land Line.	Length.	C.R.		Ind. Cap.		D.R.	
				Total.	Per N.M.	Total.	Per N.M.	Abs.	Per N.M.
" 2 "	H.D.S.	4	*1·1567	6·2236	5·3805	0·4172	0·3607	4388·4	5076·0

\* Length uncertain. See notes on drummed cable used on these lines.

TESTS AFTER COMPLETION.

August 21st, 1892.

Length.	C.R.		Ind. Cap		Calc. Temp.	D.R.		
	Total.	Per N.M.	Total.	Per N.M.		Abs.	Per N.M.	Per N.M. Red. to 75°.
1·1567	6·285	5·433	0·4376	0·3782	79°	4540·0	5251·4	6115·8

AT FERNANDO NORONHA.

UNDERGROUND CABLE ON DRUMS.

This cable does not appear to have been tested prior to its being laid in trench.

TESTS AFTER COMPLETION.

September 4th, 1892.

No. of Land Line.	Length, N.M.	C.R.		Calc. Temp. F.	Total.	D.R.	
		Total.	Per N.M.			Megohms.	
						Per N.M.	Per N.M. Red. to 75°.
3	0·500	2·774	5·554	87°	9905·6	4952·0	7434·7
4	0·500	No tests	obtainable.	Very fault	ty.		
5	0·500	" "	"	" "			

Two drums of this cable lie buried in the sand in front of hut. No tests were taken on them.



PORTIONS OF MAIN SECTIONS.

*Ex "Silvertown."*

VALUES AT 75°.

Ship Section.	Type.	No. of Land Line.	Length.	C.R.		Ind. Cap.		D.R.	
				Total.	Per N.M.	Total.	Per N.M.	Total.	Per N.M.
"2"	H.D.S. picked up	1	0·4534	2·4416	5·385	0·1664	0·3670	16277·0	7830·0
"2A"	L.I. picked up								
"2"	H.D.S. picked up	2	0·4515	2·4437	5·390	0·1636	0·3624	9158·0	4135·0
"9"	L.D.S. (new)								
"2A"	L.I. picked up								

TESTS AFTER COMPLETION.

September 4th, 1892.

No. of Land Line.	C.R.		Calc. Temp.	D.R.		
	Total.	Per N.M.		Abs.	Per N.M.	Per N.M. Red. to 75°.
1	2·552	5·628	96°	4952·8	2246·0	4573·6
2	2·557	5·664	97°	5660·3	2555·0	5382·0

Line No. 1 composed of { H.D.S., Sec. "2" = 0·1129 N.M.  
L.I., Sec. "2A" = 0·3405 " } = 0·4534 N.M.

" No. 2 " " { L.D.S., Sec. "9" = 0·2440 "  
H.D.S., Sec. "2" = 0·1686 "  
L.I., Sec. "2A" = 0·0389 " } = 0·4515 "

AT ST. LOUIS.

The drum landed at this place was cut into three equal (about) portions. No test was taken prior to cutting.

TESTS AFTER COMPLETION.

August 18th, 1892.

No. of Land Line.	Length N.M.	D.R.	
		Total.	Megs. per N.M.
2	0·0833	1261·0	105·0
3	0·0833	1160·0	96·6
6	0·0833	1315·8	109·6

Although the insulation is very low, the readings appear to have been perfectly steady, with a regular electrification. The lines extend from the old Cable House across to the Offices recently acquired.

## SUMMARY OF ELECTRICAL PARTICULARS OF UNDERGROUND LINES.

### PERNAMBUCO.

No. of Line.	Length.	C.R.			Calc. Temp.	Ind. Cap.			D.R.				
		Observed.		Per N.M. at 75°		Observed.		Per N.M. at 75°.	Observed.		Per N.M. Red. to 75°.	Per N.M. at 75°.	
		Total	Per N.M.			Total	Per N.M.		Abs.	Per N.M.			
1	1'1567	5'985	}	}	5'409 each	...	Too faulty to test for capacity.		0'3857 each	{ Too faulty to test for insulation }			5811'0 each
2	„	5'965											
3	„	6'025											
4	„	6'285	5'433	5'3805	79°	0'4376	0'3782	0'3607	4540'0	5251'4	6115'8	5076'0	

### FERNANDO NORONHA.

No. of Line.	Length.	C.R.			Calc. Temp.	Ind. Cap.			D.R.			
		Observed.		Per N.M. at 75°.		Observed.		Per N.M. at 75°.	Observed.		Per N.M. Red. to 75°.	Per. N.M. at 75°.
		Total.	Per N.M.			Total.	Per N.M.		Abs.	Per N.M.		
1	0·4534	2·552	5·682	5·385	96°	Not	taken.	0·3670	4952·8	2246·0	4573·6	7830·0
	0·4515	2·557	5·664	5·390	97°	„	„	0·3624	5660·3	2555·0	5382·0	4135·0
3	0·500	2·774	5·554	5·409	87°	„	„	0·3857	9905·6	4952·0	7434·7	5811·0
4	„	{ Too faulty to test. }		5·409 each	...	{ Too faulty to test. }		0·3857 each	{ Too faulty to test. }		{ 5811·0 each }	
5	„	{ Too faulty to test. }		5·409 each	...	{ Too faulty to test. }		0·3857 each	{ Too faulty to test. }		{ 5811·0 each }	

### ST. LOUIS.

No. of Line.	Length.	C.R.			Calc. Temp.	Ind. Cap.			D.R.					
		Observed.		Per N.M. at 75°.		Observed.		Per N.M. at 75°.	Observed.		Per N.M. Red. to 75°.	Per N.M. at 75°.		
		Total.	Per N.M.			Total.	Per N.M.		Abs.	Per N.M.				
2	0·0833	}	Not taken.	{	5·409	...	}	Not taken.	{	·3857	1261·0	105·0	...	5811·0
3	"				"	...				"	1160·0	96·6	...	"
6	"				"	...				"	1315·8	109·6	...	"

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NOTES ON SOUNDINGS  
WITH  
CONTOUR LINES ROUND FERNANDO  
DE NORONHA.

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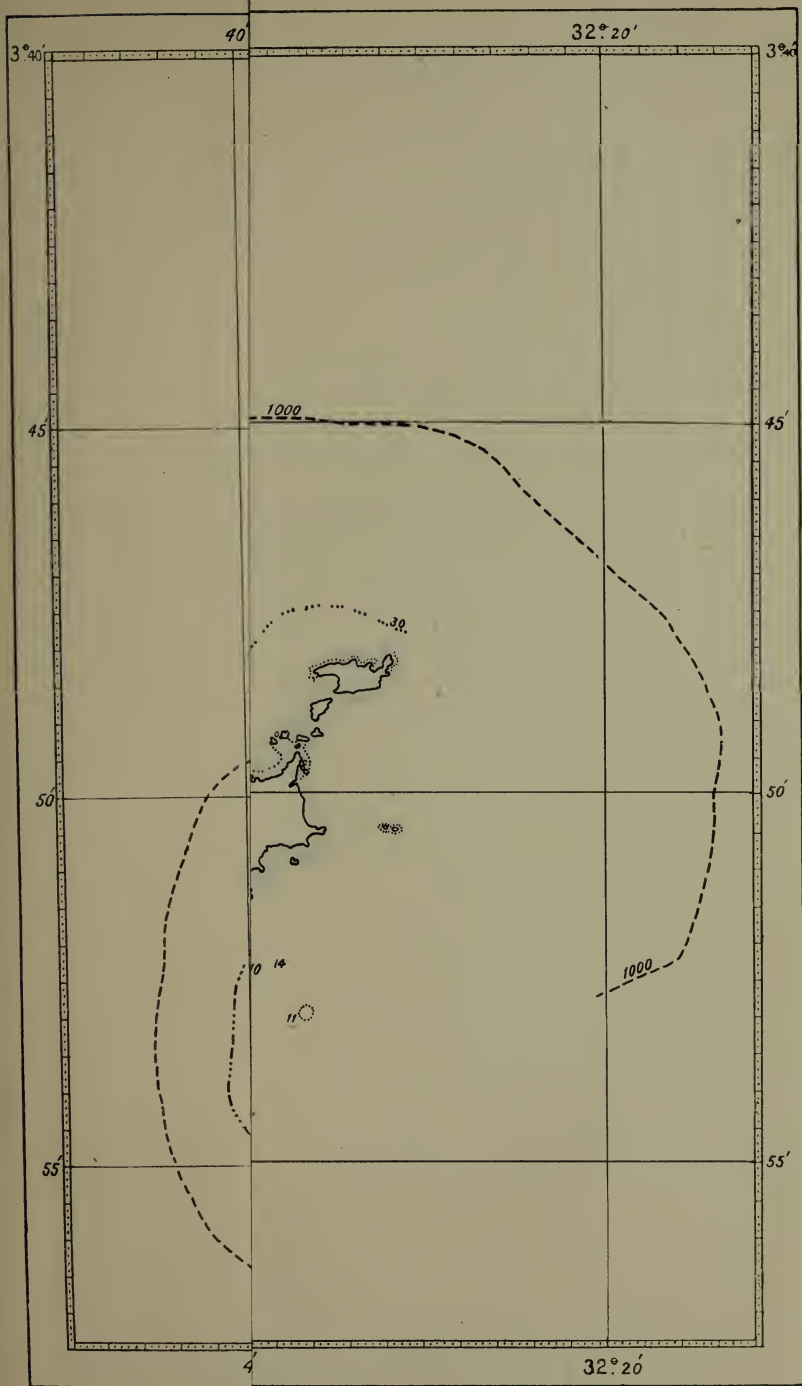
## CONTOUR LINES ROUND THE ISLAND.

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On the western side of the island the soundings show fairly regular contour lines at depths of 30 and 100 fathoms. On the eastern side no soundings were taken in shallow water, but the Admiralty charts would appear to indicate considerable irregularities, for at a distance of two miles South-east of South, or Tobacco Point, a depth of only 11 fathoms is found; on the opposite side of the island at this distance from the land a depth of between 400 and 600 fathoms would be expected.

The greatest irregularities would appear to exist on the western side of the island between the 100 and the 400 fathom lines, but the 600 and the 1,000 seem to preserve their respective positions with an exception in the case of the 600 fathom line, which coming in towards the land, forms deep indent or bay in its contour line.

All the contour lines over 100 fathoms in depth are, at the south-western extremity of the island, diverted from a normal position. The respective distances between the 400, the 600, and the 1,000 fathom lines are not changed so very much, but their relation to the 100 fathom line is completely altered. Extending in a westerly and south-westerly direction from Cape Placelière, a bank with shallow soundings is found, and a line taken out due west from the Cape would skirt the northern edge of this shallow water. At a distance of 12 miles due west from the Cape a depth of from 500 to 700 fathoms is found, and at the same distance, in a west and south-westerly direction, a depth of only a little more than 300 fathoms is met with. The western edge of the bank appears to be very steep to dropping rapidly into 1,300 and 1,400 fathoms. On the southern side of the bank the 600 fathom line again breaks from its normal position with regard to the 1,000 fathom line, and turns northward towards the centre of the bank, forming an indent or bay in its contour line. The 1,000 fathom line, with the exception of this particular case, where it is deviated by the above-mentioned bank, would seem to follow a regular contour round the island.



## CONTOUR LINES ROUND THE ISLAND.

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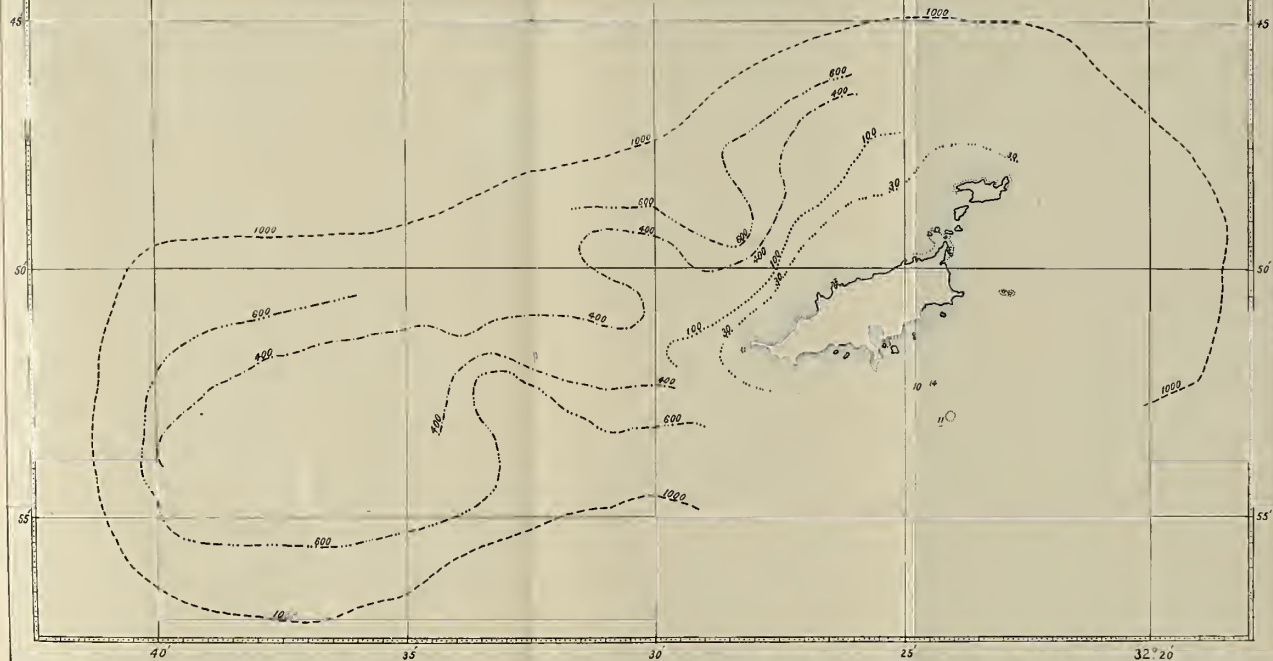
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# FERNANDO DE NORONHA

CONTOUR LINES IN FATHOMS.







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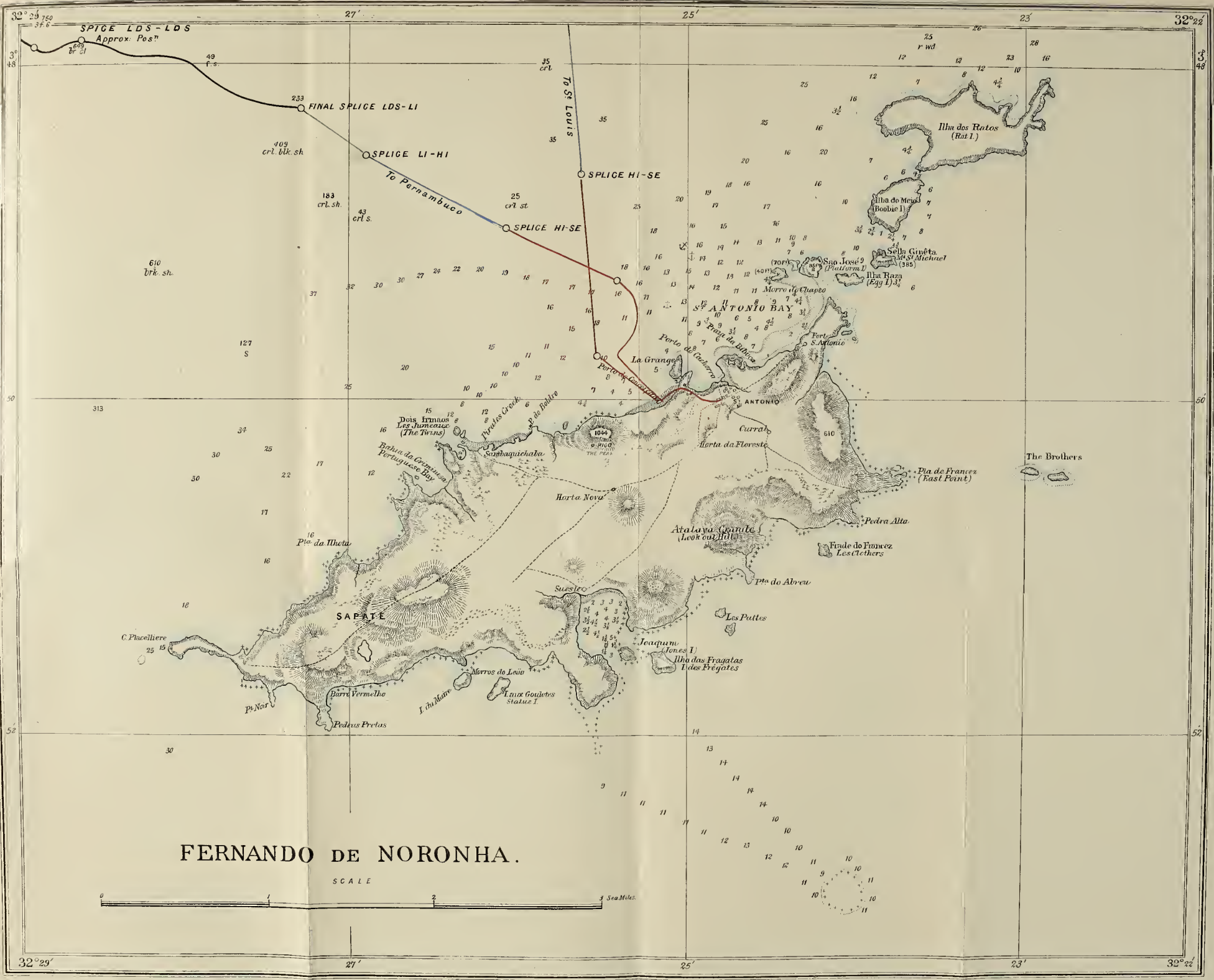
MAP OF FERNANDO DE NORONHA.

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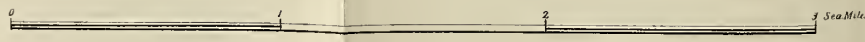
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FERNANDO DE NORONHA.

SCALE







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NOTES ON FERNANDO DE NORONHA.

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## FERNANDO DE NORONHA.

THE island of Fernando de Noronha would, from its size and position, seem to claim a greater share of attention than has been conferred upon it. Probably the difficulties placed in the way of would-be visitors by the Brazilian Government may be held as primarily responsible for the scanty information gathered by earlier investigators: Darwin, in his "Voyage of a Naturalist," and the "Challenger" Expedition, for instance. In both these cases intended exploration was prevented by the authorities. The jealousy with which the island, as a penal settlement, has been guarded is now, however, a matter of the past, and to the exigencies which have necessitated the establishment of an intermediate telegraph station in the South American Cable Company's system in this little known and solitary spot, may be attributed a more extended and untrammelled intercourse between the island and the mainland.

In the "Voyages and Works" of John Davis (Hakluyt Society), and in nautical directories such as "Horsburgh's Directory," the "South American Pilot," and the "South Atlantic Ocean," some notice of the island is to be found. Of these volumes, the last named contains the most complete description; but the most recent authority quoted in this work is a paper written by Mr. Alexander Rattray, M.D., R.N., and published in the "Journal of the Royal Geographical Society," Vol. xlii., page 431, 1873. This gentleman visited the island in H.M.S. "Bristol" in 1871. His account, particularly with regard to the chief objects of cultivation, would be found, with slight modifications, to hold good at the present time, so little change has taken place.

In the "Proceedings of the Royal Geographical Society" for July, 1888, will be found a short paper contributed by the Rev. T. S. Lea, M.A., who, in company with Mr. H. N. Ridley, M.A., F.Z.S., of the British Museum, and Mr. G. A. Ramage, of Edinburgh University, visited the island in 1887 for the purpose of making a thorough examination of its geological, zoological, and botanical features. Permission for this investigation was accorded them by the Emperor of Brazil, and they seem to have been facilitated in

every way by the local authorities. The result of this expedition is the only exhaustive treatise on the locality yet published.

The author of the paper above referred to describes the island as of volcanic origin, the formation being phonolitic and basaltic, with here and there a few remaining traces of scoriæ. With regard to the immediate surroundings, the author says: "All round the island, though interrupted in places, especially on the northern coast, there is a sort of reef formation laid bare at low water, and closely resembling the Recife at Pernambuco." Some exception may be taken to this statement since the reef at Pernambuco is an outcrop of sandstone covered with a coral formation, whereas the rocks and adjacent islands at Fernando are not only geologically different, but merely show the results of denudation and erosion without, in the slightest degree, approaching the character of a reef formation. Among the many soundings taken in the neighbourhood of the island prior to the submersion of the South American Cables, in one case only is there any record of sandstone being found; this was at a depth of 1,297 fathoms, some thirteen miles to the south-west of the island. Specimens of what appeared to be a coralline formation were frequent at all depths, but no reef coral was met with.

The author admits that his views on the geological characteristics are not shared by Messrs. Ridley and Ramage.

A few insects and plants were discovered peculiar to the island, but the indigenous plants are fast becoming extinct, the vegetation which usually accompanies the presence of man overcoming and extinguishing the native growths.

The complete reports of the zoology and botany of the island, compiled by Messrs. Ridley and Ramage, appear in another communication.

With regard to the convict system, which is dealt with by Mr. Lea at some length, a far too happy picture is drawn of the condition of the prisoners. Compared with what their lot would be were they immured within the four walls of a penitentiary, no doubt their present life is preferable. But they appear to be half starved, and what little clothing they possess is composed of any available sort of rag.

Coming to a more recent period, a description with illustrations, by Capt. D. Wilson-Barker, R.N.R., of the salient characteristics of the island, appeared in the "Daily Graphic," of February 17, 1891. Still later, an article contributed by Mr. A. P. Crouch to "Chambers' Journal," for March, 1893, gives an interesting account of convict life, with other information of general interest.

Besides these papers, the only other reference to the island of any importance, is an Official Review, or Blue Book, published by the Brazilian Government. This work contains an account of the system adopted in the management of the settlement as a penal colony, an official directory, a summary of the laws and regulations in force, a relation of the physical and biological characteristics, and, of greater interest to the general reader, a chronological history of the varying fortunes the island has experienced in the hands of its different possessors.

The island lies in a north-east and south-west direction, with a length, including the rocks and small islands at the north-east extremity, of about seven miles. Its greatest breadth does not exceed a mile and a half. Its south-west extremity, Cape Placelière, lies in Lat.  $3^{\circ} 51'1''$  S, and Long.  $32^{\circ} 28'1''$  W. The north-eastern extremity of Rat Island lies in Lat.  $3^{\circ} 48'1''$  S, and Long.  $32^{\circ} 22'9''$  W. The nearest point on the Brazilian Coast is Cape S. Roque 193 nautical miles distant, while Pernambuco lies in a south-west direction, 289 miles off. The south-western portion is very bold, and presents an exceedingly picturesque appearance, the cliffs and headlands here rocky, there bush covered, alternating with green hollows and sandy coves fringed with palms and fruit trees.

The general contour may be called very hilly, the eminences, though of no great height, rising almost directly from the shore, in some places with a foreground of cliffs, at others receding towards the centre of the island in steep slopes, undulating plateaux, or in sharply defined ridges. Here and there, more particularly on the south-eastern side, the general configuration is diversified by a few abrupt and precipitous hills.

The Peak itself, naturally the object of most attention, is situated at a little more than three-quarters of a mile to the westward of the town, and overhangs Peak Bay where the submarine

telegraph cables to Pernambuco and St. Louis are landed. It rises precipitously, with a considerable overhang on its eastern face, from the shoulders of a steep slope to a height—as measured by careful observations made on our several visits to the island—of 1,044 ft. above high-water mark. The summit is reputed to be inaccessible ; it certainly has that appearance.

The town (the only one in the island) of S. Antonio has from a little distance quite an imposing appearance. It is situated on a steep slope on the northern side of the island, not far from its north-eastern end, and faces about north-west. The buildings, variously built of stone, brick, adobe, and wood, with tiled roofs, comprise the residences of the governor and officials, the Government offices, a prison, store-houses, and work-shops. The houses line either side of a horribly steep street (paved with the cobble stones dear to all South Americans), rising from a praça, or square, just above the landing-place and intersecting another fairly large square in which the Secretaria, or Government office, holds a prominent position. The church, situated in the lower of these squares, is said to have been built by the Dutch, but bears few traces of such origin.

The citadel, partly of Dutch construction, is built on a cliff projecting from the shore line, and must have been, in its time, a place of considerable strength. The bluff is connected with the high ground at the back of the town, by a broad plateau ; on its seaward side it terminates in an almost vertical cliff, and on its western face, which overhangs the little landing cove, the descent is very precipitous. The height of the citadel is between 170 and 200 ft. above sea level.

The landing place is on a sandy beach in a little cove nestling between the citadel cliff and a low rocky promontory to the westward, and lies at the foot of a zig-zag paved way leading from the shore to the lower of the two squares. The landing cannot be called good, for the cove is exposed to more or less of the swell which perpetually runs round the island ; but with south-easterly winds is safe enough. From the end of September to April, when north, north-east, and north-west winds may be expected, the landing here is generally difficult, sometimes even impracticable. A very



little expenditure of time and labour would, however, render this cove absolutely safe for boats at all seasons.

The present method of effecting communication between ships and the shore is somewhat primitive. A "three stick" jangada, or one-man log-raft, paddled by a convict, is sent out to inspect the ship. A note is sent on shore by this means to the chief authority stating business, &c.; and later, should the vessel possess the necessary permit, a ship's boat lands the captain, or other officials, taking with them the bill of health, and the authorisation, granted by the Government of Pernambuco, to visit the island.

No boats are kept here, and beyond the small fishing rafts the only method of communication is by means of an enormous raft with a raised platform used by the Governor and the officials on such occasions as they may require to board the monthly Government steamer. During the operations connected with the laying of the submarine telegraph cables, connecting the island with Senegal and with the Brazilian coast, this raft was found of great assistance in landing station furniture, drums of land-line cable, &c. At the end of the month of September the electricians, left on the island during the laying of the Fernando Noronha—St. Louis Section, were compelled, owing to the high surf, to make use of this raft—a very wet and uncomfortable experience.

Down a narrow hollow or ravine which separates the citadel plateau from the lower portion of the slope on which the town is built, trickles a diminutive runnel. The water is highly charged with chemicals, and possesses, it is said, certain curative properties. A roughly constructed bath and protecting shed have been erected in the bed of the stream, and tradition has it that wonderful cures have been effected by the remedial qualities of the water.\* A number of trees, chiefly palm, fig, and guava, grow on the sides of the hollow, and afford a pleasing relief to a landscape monotonous in the absence of any vegetation other than grass and indian corn with which the hill sides in the neighbourhood of the town are covered.

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\* NOTE.—The geological formation would indicate the presence of salts of potassium, sodium, alumina, lime, and iron.



To the westward of the town a long straggling suburb composed of mud-walled and palm-thatched huts, in various stages of disrepair, is occupied by those convicts whose good conduct has entitled them to live in a state of comparative freedom, and who have either married on the island an arrangement encouraged by the authorities, or whose families have been allowed to join them from the mainland. Here and there, about the island, are to be met isolated cottages tenanted by convicts who have been promoted to the positions of overseers and watchmen. These superintend the daily labours of the prisoners, and keep a more or less careful guard that no effort at escape be attempted.

At between two and three miles to the westward of the town a large building, situated on a ridge, and surrounded by shrubs and trees, occupies a conspicuous position. Here are confined those convicts whose behaviour does not entitle them to own a dwelling of their own, nor is yet so outrageously bad as to necessitate their confinement in the cells of the citadel, a punishment reserved for the most refractory characters.

Earlier writers describe the island as being luxuriously wooded, very fertile, affording pasturage to considerable numbers of cattle, with abundance of fruit and vegetables, rich in a variety of agricultural produce, and well supplied with water.

On several occasions, and for varying periods, Fernando has been colonized by the French and Dutch, principally the latter, and it is said that during certain periods of its history it became the rendezvous of buccaneers and pirates. It appears to have been remarkably well fortified by its different owners, under whose care and industry the island seems to have flourished. The Portuguese could however brook no such neighbours so close to their possessions on the mainland, and, whenever able to collect a sufficient force for the purpose, expeditions were formed, and the colonists driven out, their forts, houses, cattle, and crops being destroyed; but while intolerant of foreign colonisation, it does not appear that the Portuguese themselves ever made the least endeavour to continue the cultivation of the island, or to maintain any settlement upon it. Finally, the island was practically abandoned, and for a long period remained unthought of and uncared for, the sole occupants being a

few runaway slaves and escaped malefactors, who from time to time succeeded in gaining the refuge its deserted shores extended to them. The next phase in its history was the establishment on it, by the Brazilian Government, of a penal settlement, whose existence dates, roughly speaking, to some time about the commencement of this century. Under the new conditions no real colonization could be effected, nor could any practical industry be pursued; the island became merely a large prison, and no one but the officials, soldiers, and convicts were admitted within its limits. There was some expectation that the settlement would prove self-supporting, but the want of water (due to the felling of the timber), and the consequent failure of crops, militated, on more than one occasion, against complete success in this direction.

One industry has, however, been attempted. A few years ago a company was formed in Brazil to work some phosphate deposits discovered on one of the adjacent islands. A shaft was sunk, and the necessary buildings and machinery erected. At first the convicts supplied sufficient labour at a moderate wage, with mutual benefit to the enterprise and the prisoners, and some five or six shiploads of phosphate were sent away. The Government, however, for reasons which do not appear to be very clearly understood, saw fit to put an end to this arrangement, and withdrew the convict labour. The company was compelled to obtain the necessary workmen from the mainland, but the expenses of such a method proved too great, and the enterprise failed. At the time of one of our visits to the island the machinery, stated to be of an expensive character, was being removed to Pernambuco for sale.

Quite recently rumours were current that the Government had entered into a contract, under the condition of receiving an annual rent for the island, with a company which proposed to establish on Fernando a coaling and refitting station. For the purpose of carrying out this scheme all the convicts were to be removed to the mainland; and as the State of Pernambuco, since the proclamation of the Republic, claimed by right of territory the absolute control of the island, it was proposed that each State should assume charge of its respective criminals. But as the settlement was utilised in common

by all the States of the Republic as a convenient locality for the sequestration of their more notorious evil-doers, it cannot be a matter of surprise that the view taken by the State of Pernambuco should be objected to. The scheme, at all events for the present, rests in abeyance.

It would seem a matter for regret that, however advantageous to the Brazilian Government as a penal settlement, a wider sphere of utility should not be conferred on Fernando Noronha. A harbour, perfectly safe in all winds, could be easily constructed, thus rendering the island admirably adapted as a coaling and refitting station. Its geographical position, its situation, in the neighbourhood of an ocean highway, and the comparative excellence of its climate, place it far in front of any port on the Brazilian coast, and its direct connection by submarine telegraph cables with Europe, Africa, and South America, completes its advantages. It could be advantageously made use of as a sanatorium or quarantine ground, and the Brazilian coast is sadly lacking in accessible and otherwise suitable sites of this description.

It will scarcely be credited, but it is a fact, that passengers from Europe to Pernambuco, when quarantined at the latter port are compelled to proceed to Ilha Grande, some 1,100 or 1,200 miles down the coast, there to pass the period for which they may be quarantined. It is not so very long ago that a steamer from some European port was put in quarantine at Pernambuco for a certain number of days, with the usual order to proceed to Ilha Grande. The captain, thinking that he might get through the enacted period more comfortably elsewhere than at Ilha Grande, made a trip to the West Indies and back. On his return to Pernambuco, although he had been at sea the necessary number of days to fulfil his quarantine, he was immediately ordered off to Ilha Grande, where he was compelled to undergo the quarantine originally imposed.\*

The wet season is usually described as lasting from March to July. In May, 1892, on the occasion of one of our visits to the island, we experienced a few showers, but no continual rain. We were informed that, contrary to the expected order of things, slight

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\* NOTE.—Since the above notes were written it has been announced that, through diplomatic intervention, Fernando Noronha has been constituted the quarantine port for Pernambuco.

showers had, with considerable frequency, visited the island since December of the previous year, but that the heavy rains, so necessary to the welfare of the crops, had not yet appeared. Up to the period of our last visit, in September, 1892, these unimportant showers had continued to fall, but the much desired heavy rains were still withheld.

In June, July, August, and September the prevailing winds are south-easterly, they may be expected from the north-east in October and November, while in December, January, February, March, and April the usual direction is from north to north-west. Variations to these general laws are, as in the case of the rains, of not unusual occurrence. For instance, we found a strong and steady south-easterly wind blowing in the month of May.

With a south-easterly wind we obtained an excellent anchorage abreast of the Citadel, at about half a mile from the landing cove, in  $10\frac{1}{2}$  fathoms, with bottom of sand and rock in patches.

The position of this anchorage was:—

Lat.  $3^{\circ} 49'5$  S.

Long.  $32^{\circ} 25'0$  W.

The Peak bearing: S  $38\frac{1}{2}^{\circ}$  W.

The Citadel bearing: S  $43\frac{1}{2}^{\circ}$  W.

Information obtained from inhabitants of many years' residence would seem to answer in the negative the disputed question as to a periodic appearance of rollers. No such phenomenon had ever been observed. Heavy seas and swells have, with the wind between the north and north-west, been experienced, but only, so far as could be gathered, on the occasions of strong winds or gales from the points mentioned.

The climate of Fernando may certainly be described as healthy. Formerly, when the rains were regular and heavy, fever, not however of a very malignant character, was prevalent at certain seasons. Since the complete disforestation of the island the rainfall has become very uncertain and very light, and as a consequence an almost complete immunity from malarious diseases has resulted. The wholesale destruction of the larger growths of timber was found necessary in order to prevent the convicts from building rafts and escaping to the mainland; the smaller growths are fast dis-

appearing as they are used for firewood, which is scarce and difficult to obtain. A further reason for the general healthiness enjoyed by residents is found in the strong breezes which during the greater part of the year blow over the island.

The chief disadvantage under which Fernando suffers, and it is a very serious one, is the want of good drinking water. Except directly after rain there is no fresh water to be obtained, the only substitute, supplied by a few wells and meagre springs, being extremely brackish, and frequently productive of a mild form of dysentery and other stomachic disorders.

As an instance, indicating the straits to which the inhabitants may be subjected to, the severe drought with which the island was visited in 1891 may be quoted. The expected rains did not come in the early part of the year, indeed only a few insignificant showers fell during the whole twelve months. A famine resulted, which not only was attended by great suffering on the part of the convicts, but was actually the chief reason for the revolt of a number of them, abetted, if not actually originated, by a portion of the garrison, the idea having gained ground that the officials had concealed food which should have been distributed among the prisoners. The rising was fortunately attended by no serious consequences, and speedily collapsed on the arrival of the long delayed provisions from Pernambuco.

It would appear to be a matter worthy of consideration whether the sinking of wells, either artesian or somewhat on the principle of the Abyssinian pump, would not prove of advantage. There are several places in the island where, according to all accounts, the experiment might be attended with considerable prospects of success.

It will be readily understood that, notwithstanding the natural fertility of the soil, a scarcity of fruit and vegetables is a natural sequence to the absence of water. Among the larger fruit trees the cocoanut palm, the guava, the fig, the banana, the orange and the lime appear to thrive in suitable localities. Melons, black beans or feijão, indian corn, mandioca, and the sweet potato are the chief vegetable productions. Curiously enough, the pine-apple, for which



the neighbouring mainland at Pernambuco is celebrated, does not appear to succeed on the island.

Fish is abundant, of good quality and great variety. Each official has a convict allotted to him as especial fisherman, and after supplying his master with a sufficiency of fish for the household requirements, the remainder of the catch becomes the perquisite of the fisherman. Fishing is principally pursued with hook and line in the small *jangadas* previously alluded to; these from their restricted size offer no inducements to their being employed as a means of escape.

Some cattle, sheep, and goats are reared, but meat is not to be frequently obtained, nor is it of good quality. Milk is fairly plentiful. One is astonished at the comparative scarcity of poultry, considering how favourable are the conditions for raising this class of provender. The little which is available is of excellent quality.

Horses are easily obtained, and are very cheap; fortunately so, for riding is the only outdoor exercise or amusement at command, and nearly every part of the island is accessible on horseback. A few doves and rock pigeons afford all the shooting to be met with; the sea fishing from *jangadas* does not offer a very attractive pursuit.

The sociable character and the hospitality of the Brazilians are proverbial, but at Fernando there is but little opportunity for the exercise of these qualities; the limited means at the disposal of the officials for entertaining, the restrictions imposed by their various duties, the differences in rank, and the jealousies inseparable from the conditions in which they are placed, do not permit that this small society should be an united one. The duly accredited visitor will, however, have cause to remember with gratitude the unceasing attention and solicitude he invariably is made the object of.

E. M. W.

[For the photographic views of the Island which accompany these notes I am indebted to Capt. A. S. Thomson, R.N.R.]





VIEWS OF THE ISLAND  
OF FERNANDO DE NORONHA.

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FROM PHOTOGRAPHS TAKEN BY  
CAPT. A. S. THOMSON, R.N.R.

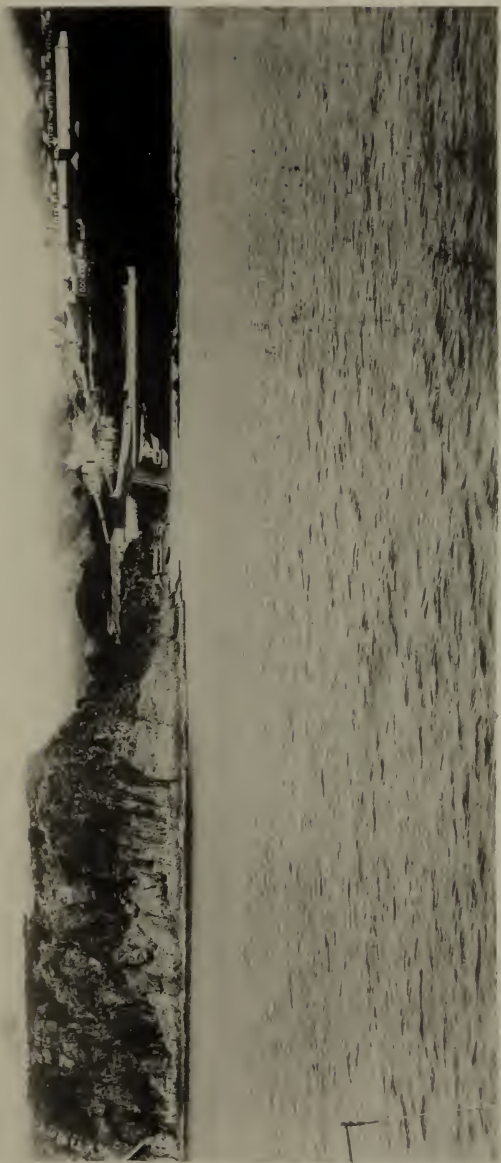
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RAT ISLAND, PLATFORM ISLAND, AND MOUNT ST. MICHAEL.

*From the Anchorage, looking North-Eastwards.*

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THE CITADEL, THE TOWN, AND THE LANDING PLACE.

*From the Anchorage, looking South.*

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THE GOVERNMENT OFFICES AND TELEGRAPH STATION.



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GENERAL VIEW OF THE TOWN.

*From below the Citadel, looking South.*

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WATER BAY, LA GRANGE ROCKS, AND THE PEAK.

*From below the Citadel, looking Westward.*

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THE PEAK, THE WESTERN SHORE OF PEAK BAY, AND THE DOIS IRMAOS ROCKS.

*From the Anchorage, looking Westward.*

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LA GRANGE ROCKS, THE PEAK, AND PEAK BAY.

*From the Anchorage, looking South.*

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THE PEAK.

*From the neighbourhood of the Cable Huts, looking Westwards.*

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THE CABLE HUTS.

*From the Beach.*

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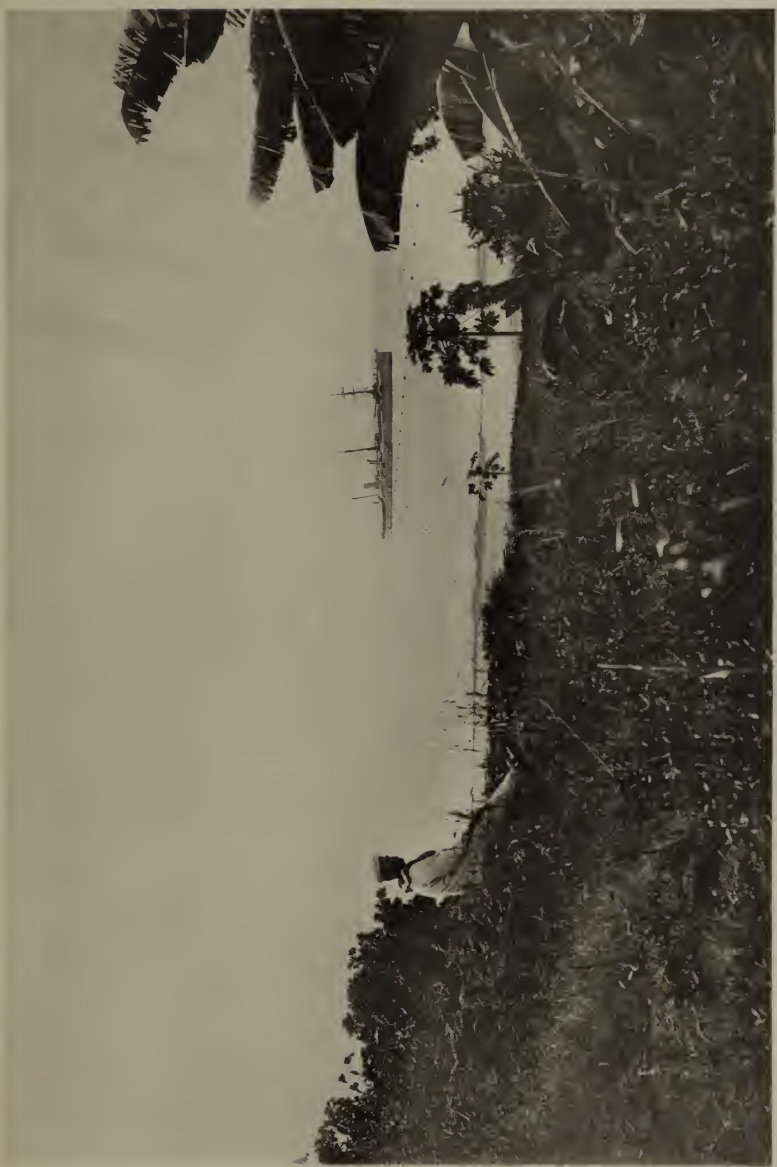


THE CABLE TRENCH ON THE BEACH, AND THE S.S. "SILVERTOWN" LANDING THE SHORE-END IN PEAK BAY.

*From the Cable Huts.*



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THE S.S. "SILVERTOWN" LANDING THE SHORE-END IN PEAK BAY.

*From the foot of the Peak.*

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THE S.S. "SILVERTOWN" LANDING THE SHORE-END IN PEAK BAY.

*From the Cable Huts. (The Governor and Staff watching the operations.)*

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LA GRANGE ROCKS, WITH VIEW OF CONVICTS AT WORK ON CABLE TRENCH IN PEAK BAY.

*From the slope at foot of the Peak.*

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VIEW OF PEAK BAY AND CABLE HUTS.

*From the S.S. "Silvertown" anchorage when landing the Shore-End.*

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# Repairs to the South American Cables.

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FERNANDO NORONHA—ST. LOUIS SECTION.

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S.S. "DACIA."

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JANUARY AND FEBRUARY, 1893.



## SOUTH AMERICAN CABLES REPAIRS.

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### INDEX.

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	PAGE.
Engineer's Report .. .. .	605
Loading of Cable on board S.S. "Dacia" .. ..	621
Distribution of Weight on board S.S. "Dacia" .. ..	622
Mechanical details of Cable on board S.S. "Dacia" .. ..	625
Mileage Table for S.S. "Dacia" .. .. .	626
List of Staff, Cable Hands, and Crew .. .. .	629
ENGINEER'S LOG .. .. .	635
Position Sheet No. 1—Grappling and picking up .. ..	683
"      "      " 2—Diversion of Cable .. .. .	684
ELECTRICAL REPORT .. .. .	691





SOUTH AMERICAN CABLE REPAIRS.

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ENGINEER'S REPORT.



# ENGINEER'S REPORT

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SANTA CRUZ DE TENERIFE.

S.S. "Dacia."

Jan. 16th, 1893.

R. K. GRAY, ESQ.,

DEAR SIR,

I have the pleasure to report our arrival at this port all well at 10.0 a.m. this day, after a most favourable passage under nine days from Greenhithe. There is nothing to keep us here except to take in live-stock and provisions, which have been ordered through Mr. Jeffery to be in readiness, and to procure some hard-wood timber for repairs to starboard bow sheave shield.

Extract from Engineer's rough log of Thursday, 13th inst.:—

"During forenoon, on looking round bow baulks, discovered that the shield to starboard bow sheave had been smashed, a piece about 4 feet by 12 inches at widest part being broken out underneath the platform. On making inquiries, found that this damage had occurred while the ship was being hauled out from her berth on south side of Victoria Dock on Thursday, 5th inst., at 11.0 a.m., by coming in contact with S.S. 'Ludgate Hill.' "

The broken part extends from the outer edge of platform round underneath, and comes right in the way of lead of rope, or cable, as case might be. This practically disables starboard bow sheave, so that we must endeavour to repair the damage by filling in with timber, bolting same to the flange of starboard bow girder, affixing thereto a cheek of hard-wood, which shall project slightly beyond the broken edge of the shield, the shield being bolted to the woodwork.

The necessary timber for this work must be procured here. It can be cut and shaped, bolts, &c., made, on the way down, ready to effect repairs on arrival off St. Louis, while awaiting results of tests.

I intend leaving this port during the course of the afternoon.

The latest telegrams from St. Louis report sea improving.

I am, dear Sir,

Yours faithfully,

H. BENEST.

S.S. "DACIA," off St. Louis.

*Jan. 28th, 1893.*

R. K. GRAY, ESQ.

DEAR SIR,

On our arrival here Saturday, 21st inst., we found the beach to be favourable for landing. Messrs. March Webb and Crouch landed with necessary instruments and gear during forenoon. Our mechanics at once proceeded to effect repairs to starboard bow sheave shield, which repair was completed by 5.0 p.m. We weighed anchor at 5.30, and proceeded to position  $15^{\circ} 21' N$ ,  $18^{\circ} 8' W$  to commence sounding.

We took profile soundings on three lines during Sunday, 22nd, Monday, 23rd, part of Tuesday, 24th inst., and arrived at Dakar 5 p.m. latter date.

Mr Webb, with Messrs. Borgela and Gégou, arrived by train from St. Louis, and joined ship same evening.

Next morning, 25th, we proceeded to position  $14^{\circ} 51' N$ ,  $18^{\circ} 11' W$ , to resume sounding along line of cable to position  $15^{\circ} 36' N$ ,  $17^{\circ} 42' W$ . This line of sounding was completed on the 26th, at noon, and a mark buoy placed in position  $15^{\circ} 36' N$ ,  $17^{\circ} 42' W$ , in 850 fms. In view of the regular character of bottom all along the line of cable in the neighbourhood of the break, it would appear advisable to raise the cable nearer in on the St. Louis side, and, should the break still prove to be seaward, to pick up to broken end. After placing the mark buoy we were about to grapple, but the wind and sea rising compelled us to postpone all operations.

During the night of the 26th wind increased, and yesterday, 27th, it blew strong with a high sea. The chief engineer having some repairs to make to the condensers, we left position at mark buoy at 8 a.m, coming to anchor off St. Louis last night at 9.30 p.m.

To-day, 28th, it is still blowing strong with a high sea in here. I received the code word "Goalpajo" from Silvergray, date 26th. I sent the following code message to Silvergray:—

*Translation.*

"Tests not altered. Have taken 40 soundings. Found regular good bottom about grappling ground. Mark buoy down 78 miles from St. Louis. Sea too rough for grappling now. Benest. 28th."

Accompanying, please find tracings of soundings ; also extracts from Engineer's log giving copies of memoranda passed between Mr. March Webb and myself at St. Louis on 21st. Mr. Webb has given me the results of his tests as placing the break or fault at from 118 to 122 knots of cable from St. Louis. I have carefully studied all figures in log and paying-out memoranda bearing on this, and, allowing percentage of slack due to each type, find that the minimum distance from St. Louis would probably be=87·3 kts. along line of cable ; the maximum, 112·7 kts. Mean=100·0 kts.

Certain indications in the paying-out memoranda point to a probable distance of 105·25 kts. in position 15° 10' N, 18° 0' W. But these assumptions are based upon the possible existence of bad and irregular ground in vicinity ; so far the soundings do not show any bottom of this character.

I have decided to grapple for and raise cable at position near mark buoy before-mentioned, as, in case of break being further seaward cable would have to be diverted up to this point.

The health of ship's company is good.

I am, Sir,

Yours faithfully,

H. BENEST.

S.S. "DACIA,"

*March 4th, 1893.*

## REPAIR TO SOUTH AMERICAN CABLE.

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ROBERT KAYE GRAY, Esq.,

DEAR SIR,

Since the date of my last letter reporting progress the following work has been done:

29th Jan. On the 29th January last the "Dacia" got under way from St. Louis, and proceeded to position of marked buoy in Lat.  $15^{\circ} 36' N.$ ,  
30th Jan. Long.  $17^{\circ} 42' W.$ , the weather having moderated. On 30th, at 6 a.m., sighted the mark buoy, the flagstaff broken and lamps lost. Replaced staff, and started at 9.5 a.m., sounding in a profile line across cable near to position for grappling (see chart). At 3.25 p.m. lowered grapnel in 850 fms. and payed out 1200 fms., rope and chain. Dragged to SE ( $S 78^{\circ} E$  true). Strain while grappling 2 to 3 tons. At 7 p.m. commenced to pick up, the cable being on. Strain during the picking up  $3\frac{1}{2}$ , 4,  $4\frac{1}{2}$  tons. At 8.55 p.m. cable at bows. Strain five tons. The calculated strain for this depth with 10% slack would give 45.6 tons on the grapnel, 5.5 tons on the cable. At 11 p.m., after very satisfactory tests had been taken, the St. Louis End was buoyed, and we proceeded to pick up cable towards the break, continuing  
31st Jan. through the night and during the following day (31st January). The mean strain while picking up was 2.6 tons, and 2.1 tons when stopped. The cable came up in perfect condition and coiling well after the first flake. During the day the strain while picking up increased to 4 tons, falling to 2.1 tons when stopped. At 4 p.m. the strain occasionally rose to 5 and 6 tons. At 6 p.m. cable came in quite freely, having cleared itself from bottom. At 6.25 p.m. the end came on board. From 5.30 p.m. cable had shown evidence of much rubbing, the outer cords being stripped in places, unwound and rucked up. The tape near the end rubbed bare to the wires on one side. On examining the break, found about  $\frac{1}{2}$ -inch of the conductor projecting from the

gutta. Conductor and gutta nearly covered by the sheathing wires, the broken ends indicating that considerable strain, with some torsion, had been sustained. Each wire was well drawn down at the end. After this we proceeded to sound along profile line from the position where the end came on board in 1320 fms. towards the ESE, across the line of cable (*see* chart). During the sounding work joint and splice were made between L.D.S. 1st Feb. picked up (after turning over damaged part) in after main tank 25.61 N.M., being afterwards turned over from fore main tank into which it had been picked up. This work was finished at 6.25 p.m. on 1st February.

On 2nd at 4.32 a.m., we had completed the line of soundings, 2nd Feb. making in all 63. A buoy was got ready to mark position for grappling the Fernando End. During this, as on preceding days, positions were difficult to get owing to dense haze, caused by fine particles of dust blown off the land by strong easterly winds.

At noon we could get no reliable position, but at 4 p.m. sights had been obtained for Longitude and a mark bouy was put down in Lat.  $11^{\circ} 55' 7''$ , Long.  $18^{\circ} 2' 9''$  in 1195 fms. At 5.30 p.m. commenced to lower grapnel, and paid out 1650 fms. rope and chain. At 6.53 p.m. grapnel was let down and we commenced to drag to SE. At 10.30 p.m. the wind and sea rose so much that it was decided to pick up grapnel and suspend operations until a more favourable opportunity.

The dust haze was still very thick. Ship was abreast of Southern 3rd Feb. mark buoy at 3.55 p.m. when lights were put on it. At 5.15 p.m. ship was in position for grappling. At 7.33 p.m. grapnel was down and we grappled dead slow to the SE. Strain shown on dynamometer 4 tons. At 10.25 p.m. strain rose to 5.5 tons. Shortened in 64 fms. of rope, and set on dead slow again. At 11.37 p.m. commenced to pick up the cable being on. Strain shown on dynamometer while raising bight was 4.5, 5.0, 5.5 and 6 tons. This was under the calculated strain for raising cable at this depth, which would be, with 10% slack, 6.7 tons on the grapnel and 8.12 tons on the cable. The maximum strain when cable was at the bows was 6.5 to 7.0 tons, falling to 6 tons when stopped, and afterwards to 5.0 and 4.5 tons. Depth 1250 fms.



4th Feb. At 3 a.m. the cable was up. On cutting, the tests to Fernando showed that portion of the cable to be perfect. At 6.35 a.m. the Fernando End was buoyed. The cable towards break was then picked up. The first  $\frac{1}{2}$ -mile coiled was screwy. The strain at first, while picking up, was 4.0 tons, continuing so with slight variations, falling to 3.5 tons during the afternoon. At 4.40 p.m. took sounding and got 1160 fms. soft mud. At 5.52 strain increased to 4.5 and 5.5 tons. Stopped occasionally to relieve cable and break out of ground. At 6 p.m. the strain suddenly fell to 2.2 tons, cable having cleared itself from some obstruction on bottom. It came in screwy from this and coiled badly, showing evidence of much rubbing, outer cords being stripped in places and the tape serving rubbed bare to the sheathing wires on one side of the cable, similar to the other end. Length of 13 fms. afterwards cut off in this condition and preserved for inspection.

At 6.56 p.m. the end came in. It showed a clean break under strain, the sheathing wires being close round core and each wire well drawn down at the point as in the other end. The core was well inside the sheathing, and the conductor scarcely shewed. The G.P. appeared as though it had been damaged by severe pressure. The length of Light Deep Sea picked up on this side of the break was 20.57 n.m. by indicator.

The depth at this end was 1220 fms. (*see* chart) soft mud and ooze.

th Feb. At 7.25 a.m. the damaged part was turned over, and we proceeded to join and splice up the portion last picked up with length of Light Deep Sea previously picked up on the St. Louis End of break, and which had been spliced up and turned over into after main tank.

At 10.40 course was set for northern mark buoy to put lights on it in case we might make the buoy after dark next day while paying out from Fernando Buoy. A fresh breeze and some current against ship, however, prevented our sighting the buoy before dark, so it was decided to lie by all night and make the buoy in the morning.

th Feb. At 6.45 a.m. ship was close to the buoy. Two dioptric lamps were put on, and ship set on for buoy on Fernando End. At 11.50 a.m. sighted this buoy, and, the weather looking promising, we picked it up, and got cable on board. Strain while picking up, 2.9 tons; when

stopped, 2.1 tons. A length=1.25 n.m. was picked up on Fernando End so as to cut off the strained part of cable which had been suspended from grapnel. The whole of this piece was, however, in good condition, there being no kinks or any signs of strain. At 4 p.m. the joint between cable in after main tank which had been passed round from paying-out gear to bow, was commenced, and at 5.20 p.m. it was finished, tested satisfactorily, and splice started.

At 7.30, splice being finished and all being ready, the cable bight was slipped from forward and paying-out commenced—very slowly at first owing to cable being high in the tank and slightly screwy. From 7.40 to 8.30 the ship's engines were going at 31 revs., the first course being N 28° W true. At 9 p.m. engines had been increased to 36 revs.; at 11.30 to 40 revs., at which rate they were kept steady throughout the night, it not being considered safe to increase the speed. The distance run on the first course by log was =14.4 n.m. At 0.30 a.m., Feb. 7th, course was changed to N 19° E true, 7th Feb. and the distance run on this by log was=12.5 n.m. At 2.30 a.m. course was changed to N 73° E true, and the distance run on this was=25.1 n.m. by log. At 6.30 a.m. while on this latter course, ship was slowed and stopped to coil down a lay-out splice in the tank between Secs. 9 B and pt. 5 (the bottom length of 75 kts. in tank).

At 7 a.m. all was clear in tank and paying-out resumed. Ship's engines 36 revs. At 7.20 put ship's engines on to 40 revs.; at 7.45 to 44 revs. and at 7.54 a.m. to 48 revs. At 8 a.m. the course was changed to N 62° E true.

Owing to cloudy overcast weather observations could not be taken until 7 a.m., when the captain got sights for a position line. The engines were now increased to 50 revs. At 8.15 a.m. the buoy was sighted 2 miles distant, slightly on port bow. The course was changed to N 42° E true.

The distance made overground by log on course N 62° E was 2.9 kts. (corrected), on course N 42° E distance made by log was 2.0 kts., and from the buoy to the position where final splice was made=0.3 kt. (*see* position sheet accompanying).

At 9 a.m. up to buoy, and commenced picking up the St. Louis End. At 10 a.m. end was on board. At 11 a.m., the tests being thoroughly satisfactory on both ends, the Fernando End was passed round from

aft for final splice. At 0.30 p.m. commenced joint. At 2.10 p.m. joint was tested and found o.k. Splice was started and finished at 3.40 p.m.

At 4 p.m. the final bight was slipped, and the ship set on for Dakar, leaving the mark buoys in position until learning the results of final tests.

8th Feb.

At 6.30 a.m. anchored in Dakar Harbour. Fires were let down and the ship's engineers started to carry out necessary repairs to the condenser and to overhaul air and circulating pump, valves, &c.

Messrs. Borgela and Gégou left the ship to return to St. Louis. The results of tests received from Mr. Crouch at St. Louis were highly satisfactory, as see Mr. March Webb's report, appended.

*Remarks.*

Regarding the time for starting with the paying out, it was an inconvenient one. But there appeared to be no choice, the weather having hitherto been so uncertain and the smoothest spells having been at night. In addition to this it was an awkward distance to run (nearly 60 miles) in about 12 hours. By starting at night we had the advantage of making and getting up to, the cable buoy on the St. Louis End in the morning, the best time for working. By starting in the morning we should have had to lie with cable bight on board all night; or by picking up and splicing on in morning, should have started some time during forenoon, reaching the other end about midnight.

The brakes gave trouble from the start, the large amount of slack payed out being mainly due to this cause. A good deal of intermittent friction was caused by spur on cross-bar above, the brake straps grinding against the edges of the inside of brake wheels. This bar was taken off. At times the brakes would bring up sharp without any apparent cause, it was consequently unsafe at any time to carry the strain proportionate to speed and depth so as to give 10% of slack. To the last the brakes were very uncertain in their action, for a time running perfectly smoothly, then suddenly sticking.

A table is appended showing the calculated strain for 10% slack, and the (approximate) strains indicated by dynamometer.

The cable has been diverted from its original line to the westward for a distance overground of 57·2 N.M., and 17·0 from the position at which break occurred. The length of cable expended is 73·53 N.M. by indicator. The total slack is 16·33 N.M., or 28·5%.

A table is appended showing the distribution of slack on the different courses. This table is based on the assumption that the dead reckoning is nearly correct. The dotted line of track of cable on chart is the D.R. line. The continuous line is from Captain's subsequent corrections.

I remain,

Yours faithfully,

H. BENESE,

Engineer-in-Charge.

ST. LOUIS—FERNANDO NORONHA REPAIRS, 1893.

TABLE SHOWING CALCULATED STRAIN FOR 10°/o SLACK LIGHT DEEP SEA, ALSO DYNAMOMETER STRAINS AT EACH 30 MINS. DURING THE PAYING OUT.

Depth. fms.	Ship's speed. log.	Speed of Cable.	Revs. of Ship's Engines.	Calculated Strain.	Strain shewn on Dynamometer.	Remarks.
1300	3·0	4·5	31	21·8	19·64	30 min. after starting.
1300	3·0	4·3	33	21·8	18·75	60 " " and each ½ hour after.
1350	3·0	4·8	36	22·6	17·85	Trouble with cross bar on top of brakes. Took it off.
1370	3·025	5·2	36	22·8	17·85	
1400	3·6	5·0	36	22·4	14·85	
1430	3·6	5·2	38	22·7	14·28	Brakes bringing up.
1450	4·8	5·7	40	21·6	16·96	
1450	4·8	5·9	40	21·6	16·07	
1470	5·0	5·6	40	21·8	10·71	} Brakes sticking. Had to ease up continually. Two hands at wheel all the time.
1470	5·0	5·9	40	21·8	11·60	
1400	5·0	6·2	40	21·0	15·17	

1400	5.0	6.1	40	21.0	10.71	Strain on dynamometer fluctuating.
1300	5.0	5.3	40	19.5	10.71	
1300	5.0	6.5	40	19.5	9.82	
1250	5.0	5.8	40	18.4	14.28	Brakes sticking at intervals.
1230	5.0	6.2	40	18.2	13.39	
1210	5.0	6.6	40	18.0	14.28	Mean speed of cable, during 7 hours, ship's engines making 40 revs = 5.9 kts. per hour.
1200	5.0	5.8	40	18.0	14.28	
1200	5.0	5.9	40	18.0	14.28	
1150	5.0	5.9	40	17.3	14.28	Slowing down to coil laid out splice into tank.
1100	4.0	5.1	35	17.6	14.28	
1050	slow	3.2	—	—	14.28	
960	4.5	5.6	36	14.7	14.28	Approaching buoy.
890	5.0	5.3	40	13.5	14.28	
850	5.5	6.1	48	12.3	6.25	

### DISTRIBUTION OF SLACK ON COURSES.

Courses True.	Cable paid out. N.M.	Distance over- ground. N.M.	Total Slack. N.M.	Per- centage.	Remarks.
N 28° W	21.75	14.4	7.35	51.0	Distances by log throughout.
N 19° E	14.64	12.5	2.14	17.0	
N 73° E	30.78	25.1	5.68	22.0	
N 62° E	3.05	5.2	1.16	22.0	Short distances from 8.0 a.m. to taking the St. Louis End on board..
N 42° E	2.09				
To buoy and picking up towards St. Louis	1.22				These figures are from Pay- ing-out Log.

Total Slack = 16.33 N.M.

### DISTRIBUTION OF SLACK ACCORDING TO REVS. OF ENGINES.

Conditions of Paying Out.	Revs. of Ship's Engines.	Speed by Log.	Total Slack. N.M.	Per- centage.
Leaving Fernando Bight slipping aft and starting paying out	24 to 27	—	1.678	87
For 10 miles running at.....	30 to 35	1½ to 3½	4.662	60
„ 34 „ „ .....	40	4.9	7.09	20
„ 11 „ „ .....	40 to 41	5.0	1.49	13
„ 2 „ „ .....	Reduced	speed		
And coming up to buoy at St. Louis End. Picking up on same = 27 N.M. and 838 N.M. length of cable ship to bottom	..	..	1.410	65

Total Slack = 16.33 N.M.



TABLE OF SPEEDS IN RELATION TO REVS. OF SHIP'S  
ENGINES, S.S. "DACIA."

Revs. of Engines.	Speed of Ship by Log Cable astern.	Speed of Ship by old Table allowing for slip.	Remarks.
60	6·5	8·4	Figures marked * are deduced from memoranda in Paying- out Log from speeds registered by Patent Side Log.
55	6·2	7·5	
50	*5·75	6·9	
45	*5·0	6·2	
40	*4·93	5·4	
35	*3·3	4·7	
30	*1·25	4·0	



ACTUAL LOADING OF CABLE ON BOARD  
“DACIA.”

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DISTRIBUTION OF WEIGHT ON BOARD  
“DACIA.”



SOUTH AMERICAN CABLE COMPANY'S REPAIRS, 1893.

ACTUAL LOADING.

No. 4.			No. 3.			No. 2.			No. 1.		
Type.	Fact. No.	Sec. n.m. Tons.	Type.	Fact. No.	Sec. n.m. Tons.	Type.	Fact. No.	Sec. n.m. Tons.	Type.	Fact. No.	Sec. n.m. Tons.
S.E.	2342	pt. 5 5'000 45'0							H.I.	1179	pt. 9A 0'6420 2'70
L.D.S.	2083	pt. 9 5'383 11'6							In separate coils.		
L.D.S.	1177	pt. 7 11'7125 17'3							H.I.	1179	pt. 9A 1'5330 6'40
N.M. Tons. 22'1055 73'9									N.M. Tons. 2'1'50 9'100		

SUMMARY.				
Tank No. 1	..	2'1750 N.M.	..	9'100 Tons.
" 2	..	—	..	—
" 3	..	96'4710	..	208'300 "
" 4	..	22 1055	..	73'900 "
Total		120'7515 N.M.		291'300 Tons.

# DISTRIBUTION OF WEIGHT ON BOARD S.S. "DACIA "

## ON LEAVING GREENHITHE.

Cable in Tank No. 1	..	..	..	..	..	9.1 Tons.
„ „ „ 2	..	..	..	..	..	—
„ „ „ 3	..	..	..	..	..	208.3 „
„ „ „ 4	..	..	..	..	..	73.3 „
Coal in „ „ 2	..	..	..	..	..	180.0 „
„ Bunkers	..	..	..	..	..	520.0 „
Water in Cable Tanks	..	..	..	..	..	—
„ Ballast „	..	..	..	..	..	300.0 „
„ Main Boilers	..	..	..	..	..	36.0 „
„ Fresh	..	..	..	..	..	50.0 „
Cable Stores	..	..	..	..	..	50.0 „
„ Buoys	..	..	..	..	..	10.0 „
Deck Stores, Anchors, and Chains			..	..	..	31.0 „
„ Sails and Awnings	..	..	..	..	..	3.0 „
„ Paints and Oils	..	..	..	..	..	1.7 „
„ Ropes, &c.	..	..	..	..	..	5.5 „
„ Boats	..	..	..	..	..	5.0 „
„ Blocks, Sundries, &c.		..	..	..	..	1.5 „
Steward's Stores	..	..	..	..	..	34.0 „
Engine Room Stores	..	..	..	..	..	3.5 „
Deck Machinery	..	..	..	..	..	70.0 „
Total						1591.9 Tons.

Draught of Ship { Foreward 19'.0".  
Aft 16'.9".

Mean 17' 10".5.

MECHANICAL DETAILS OF CABLES ON  
BOARD "DACIA."

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MILEAGE TABLE FOR "DACIA."





# MECHANICAL DETAILS OF CABLES ON BOARD S.S. "DACIA" ON LEAVING THAMES.

Type.	Tank.	Section.	Length.	Factory No.	No. of Wires.	Diameter of each Wire.	Gauge.	Circumference of Cable.	Outer Serving.	Weight per N.M.		Remarks.
										Wet., in air.	In water.	
S.E. ....	4	Pt. 5	N.M. 5·0000	2342	Inner } 16 Sheathing } Outer } 17 Sheathing }	" 0·0918 0·212	No. 13, L.S.G. 5, L.S.G.	" 5·488	Jute and compd.	Tons. —	Tons. —	This type is No. 2147 re-sheathed.
H.I. ....	1	" 9A	2·1750	1179	12	0·192	6, L.S.G.	3·518	Tape and compd.	4·25	3·05	1st and 2nd West African type.
L.D.S. ...	4	" 7	11·7125	1177	15	0·0718	15, L.S.G.	3·047	Tape, hemp, cords, and compd.	1·485	0·589	1st West African.
L.D.S. ...	3	" 9&5	96·4710	2147	16	0·0918	13, L.S.G.	3·264	Ditto .....	2·08	1·12	South American Cable. G.P. core.
L.D.S. ....	4	" 9	5·3930	2083	16	0·0918	13, L.S.G.	3·264	Ditto .....	2·12	1·13	South American Cable. I.R. core.

# MILEAGE TABLE FOR S.S. "DACIA."

Cables:—Nos. 2083, 2147.

## FORWARD DRUM.

Circumference of Drum=18'.7812, 318.9 revs.=1 N.M.

Revs. per Minute.	Knots.	Revs. per Minute.	Knots.	Revs. per Minute.	Knots.	Revs. per Minute.	Knots.
10	1.88	20	3.77	30	5.65	40	7.54
11	2.07	21	3.95	31	5.83	41	7.72
12	2.56	22	4.14	32	6.03	42	7.90
13	2.45	23	4.33	33	6.22		
14	2.59	24	4.53	34	6.40		
15	3.01	25	4.71	35	6.68		
16	3.02	26	4.99	36	6.78		
17	3.20	27	5.09	37	6.97		
18	3.39	28	5.27	38	7.16		
19	3.57	29	5.47	39	7.34		

## AFTER DRUM.

Circumference of Drum=19'.2083, 316.9 revs.=1 N.M.

Revs. per Minute.	Knots.	Revs. per Minute.	Knots.	Revs. per Minute.	Knots.	Revs. per Minute.	Knots.
10	1.89	19	3.97	28	5.30	37	7.01
11	2.08	20	3.79	29	5.49	38	7.20
12	2.27	21	3.97	30	5.68	39	7.38
13	2.46	22	4.16	31	5.87	40	7.58
14	2.65	23	4.35	32	6.06	41	7.76
15	2.89	24	4.54	33	6.25	42	7.94
16	3.02	25	4.73	34	6.43		
17	3.21	26	4.92	35	6.70		
18	3.40	27	5.11	36	6.81		

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LIST OF STAFF, CABLE-HANDS, AND CREW.

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# SOUTH AMERICAN CABLE COMPANY'S REPAIRS, S.S. "DACIA."

JANUARY 4TH TO MARCH 15TH, 1893.

## LIST OF STAFF, CABLE-HANDS, AND CREW.

### STAFF.

CABLE.	DECK.
Mr. H. Benest, Engineer-in-Charge	Mr. A. S. Thomson, Captain.
„ E. March-Webb, Electrician-in-Charge.	„ R. Hudson, Chief Officer.
„ H. E. Cann, Assistant Electrician.	„ T. W. Sharp, 2nd Officer.
„ C. Bright, „ „	„ J. J. Backway, 3rd Officer
„ A. P. Crouch „ „	„ A. B. Cochrane, Surgeon.
„ E. C. Daubeny, Assistant Engineer.	
„ R. G. Reidy, Assistant Engineer	
„ W. R. Blind, „	

### ENGINE ROOM.

Mr. J. Maclachlan, Chief Engineer.
„ R. Campbell, 2nd „
„ C. Taylor, 3rd „
„ J. Muir, 4th „

### CABLE-HANDS.

T. Read, Foreman.	J. Ham, Carpenter.
J. Pollard, Assistant Foreman.	W. Miles, Fitter's Mate and Blacksmith.
S. Thompson, „	P. Pidwell, Storekeeper.
W. Wheeble, Leading-hand.	W. Field, Lamptrimmer.
C. Buckmaster, „	G. Ayres, Cable-hand.
C. Campbell, Cable-hand.	J. Capps „
J. Burrell „	W. B. Marjoram „
A. Jones „	J. Ayres „
B. Cox „	Geo. Day „
J. Baggett „	R. Molt, Joiner.
A. Young „	E. Barnard, Electric Light Fitter.
R. Ritchie, Fitter.	

*List of Staff.*  
S.S. "DACIA."

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LIST OF STAFF, CABLE-HANDS, AND CREW—*continued.*

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CREW.

J. Hockaday, Boatswain.	E. Spears, Quarter-Master.
J. Tidy, Boatswain's Mate.	G. White
R. Perkins                ,,	C. Stromberg, Storekeeper and
H. S. Thompson, Carpenter.	Sailmaker.
W. Hale, Lamp Trimmer.	A.B.'s., 18.
F. Husband, Quarter-Master.	W. Pereira, Boatswain's Boy.
H. M. Brown               ,,	

FIREMEN AND TRIMMERS.

W. G. Hebdige, Donkeyman.
Six Firemen.                                       Four Trimmers.

STEWARDS AND COOKS.

J. J. Pereira, Chief Steward.	
W. Blaker, 2nd Steward.	R. Lomas, Pantryman.
G. Jarvis, Assistant Steward.	J. Miller, Engineer's Steward.
R. E. Riden                ,,	F. George, 1st Cook.
F. Revis                   ,,	R. Campbell, 2nd Cook.
G. Gilbert                 ,,	E. Edmonds, Butcher.
E. Jenkins                 ,,	J. Campbell, Baker.
W. Hodges                 ,,	W. Collie, Scullion.
H. Greenwood, Storekeeper.	

NUMBER OF PERSONS ON BOARD.

Staff ..        ..        ..        ..        ..        ..	17
Cable-hands ..        ..        ..        ..        ..        ..	23
Crew ..         ..         ..         ..         ..         ..	29
Firemen and Trimmers ..        ..        ..        ..        ..        ..	10
Stewards and Cooks ..         ..         ..         ..         ..         ..	16
Donkeyman ..        ..        ..        ..        ..        ..	1
Total ..        ..        ..        ..        ..        ..	96



SOUTH AMERICAN CABLE REPAIRS.

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ENGINEER'S LOG.



AT ST. LOUIS.

---

SOUNDING.

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JANUARY 21ST TO JANUARY 24TH, 1893.



# ENGINEER'S LOG

S.S. "DACIA."

Hour.

At St. Louis.

SATURDAY, JANUARY 21st, 1893.

A.M.

9.0 Anchored off St. Louis.  
Communicated with shore and obtained pratique.

11.15 Messrs. E. March Webb and A. F. Crouch went on shore,  
in pirogue, to localise break.

NOON. Light NNE airs. Clear weather. Surf on beach light.  
Bar. 30.115 (76° F.). Temp. 69°·2 F. dry, 66°·2 F. wet.  
Sea surface 65°·5 F.

P.M.

3.30 Temp. No. 3 cable tank, 63°·5.

Memorandum received by Mr. Benest from Mr. Webb stating that tests put break at between 120 and 130 miles from St. Louis, that cable had been straightened upon beach by M. Borgela according to Mr. M. H. Gray's instructions, and that enquiries were being made with regard to articles required by the ship's surgeon.

4.0 Shore signalled by hand flag: "Further tests put break at 121 miles."

5.30 Hove up anchor and proceeded to repairing ground to take soundings.

NOTE.—During the day the repairs to starboard bow sheave (damaged when leaving Albert Dock) were completed.

## SOUNDING.

SUNDAY, JANUARY 22nd, 1893.

A.M.

7.37 Profile from Westward towards Cape Verd (No. 1).

In position for taking a profile line of soundings from the Westward towards Cape Verd, across the line of cable.

Sounding { Lat. 15° 21'·2 N } 1340 fms. No specimen.  
No. 1 { Long. 18° 9'·5 W }

Lost shank of sounding tube.

S.S. "DACIA."

Hour.

SUNDAY, JANUARY 22<sup>ND</sup>, 1893,—*contd.*

**Profile from Westward towards Cape Verd (No. 1)**  
—*contd.*

A.M.

9.47

Sounding { Lat. 15° 20'·0 N } 1450 fms. sft. gn. m.  
No. 2 { Long. 18° 6'·7 W }

10.59

Sounding { Lat. 15° 19'·0 N } 1413 fms. stf. gn. m.  
No. 3 { Long. 18° 4'·3 W }

NOON.

Moderate NNE breeze. Clear weather.

Bar. 30·114 (78° F.). Temp. 74°·7 F. dry, 69° F. wet. Sea surface 73°·2 F.

Temp. of cable tank No. 3: 63°·5 F.

POSITION { Lat. 15° 17'·0 N.  
{ Long. 18° 0'·4 W.

Distance run since 5.45 p.m. yesterday = 105·7 N.M.

P.M.

0.13

Sounding { Lat. 15° 17'·9 N } 1200 fms. sft. gn. m.  
No. 4 { Long. 18° 1'·7 W }

1.26

Sounding { Lat. 15° 16'·7 N } 1160 fms. sft. gn. m.  
No. 5 { Long. 17° 59'·3 W }

2.35

Sounding { Lat. 15° 14'·9 N } 1100 fms. sft. gn. m.  
No. 6 { Long. 17° 55'·9 W }

3.39

Sounding { Lat. 15° 13'·0 N } 990 fms. stf. gn. m.  
No. 7 { Long. 17° 52'·5 W }

4.41

Sounding { Lat. 15° 11'·3 N } 910 fms. stf. gn. m.  
No. 8 { Long. 17° 49'·0 W }

5.41

Sounding { Lat. 15° 9'·3 N } 835 fms. sft. gn. m.  
No. 9 { Long. 17° 45'·4 W }

Profile No. 1 completed.

**Profile from Eastward across Line of Cable (No. 2).**

7.51

In position for taking a line of soundings from the Eastward across the line of cable.

Sounding { Lat. 15° 6'·6 N } 880 fms. sft. gn. m.  
No. 10 { Long. 17° 50'·9 W }

9.0

Sounding { Lat. 15° 5'·6 N } 960 fms. stf. gn. m.  
No. 11 { Long. 17° 54'·3 W }

*Engineer's Log.—Sounding.*

S.S. "DACIA."

Hour.

MONDAY, JANUARY 23<sup>RD</sup>, 1893.

**Profile from Eastward across Line of Cable (No. 2)**  
—*contd.*

A.M.				
9.58	Sounding {	Lat. 15° 8'·5 N No. 12 { Long. 18° 2'·4 W	} 1200 fms.	stf. gn. m.
10.21	Sounding {	Lat. 15° 8'·2 N No. 13 { Long. 18° 5'·6 W	} 1210 fms.	stf. gn. m.
11.48	Sounding {	Lat. 15° 7'·7 N No. 14 { Long. 18° 8'·9 W	} 1340 fms.	stf. gn. m.
NOON.	<p>Moderate ENE breeze. Weather clear and fine.  Bar. 30·098 (79° F.). Temp. 73°·2 F. dry, 61°·5 F. wet.  Sea surface 72°·7 F.  Temp. of No. 3 cable tank: 64° F.  POSITION { Lat. 15° 7'·7 N.  { Long. 18° 8'·9 W.</p>			
P.M.				
3.27	Sounding {	Lat. 15° 7'·7 N No. 15 { Long. 18° 13'·3 W	} 1450 fms.	stf. gn. m.
	Sinker and 1970 fms. wire lost.			
5.0	Sounding {	Lat. 15° 7'·7 N No. 16 { Long. 18° 17'·7 W	} 1500 fms.	stf. gy. m.
	Profile No. 2 completed.			

**Profile from the Westward towards Cape Verd (No. 3).**

6.49	<p>In position for taking a line of soundings from the Westward towards Cape Verd across the line of cable.</p>			
	Sounding {	Lat. 15° 5'·3 N No. 17 { Long. 18° 12'·4 W	} 1420 fms.	sft. gn. m.
8.10	Sounding {	Lat. 15° 4'·0 N No. 18 { Long. 18° 9'·9 W	} 1370 fms.	sft. gn. m.

TUESDAY, JANUARY, 24<sup>TH</sup> 1893.

A.M.				
7.41	Sounding {	Lat. 15° 3'·2 N No. 19 { Long. 18° 5'·5 W	} 1300 fms.	stf. gn. m.
9.11	Sounding {	Lat. 15° 1'·1 N No. 20 { Long. 18° 3'·1 W	} 1210 fms.	stf. gn. m.



*Engineer's Log.—Sounding.*

S.S. "DACIA."

Hour.	TUESDAY, JANUARY 24 <sup>TH</sup> , 1893— <i>contd.</i>	
A.M.	<b>Profile from the Westward towards Cape Verd</b> (No. 3)— <i>contd.</i>	
10.33	Sounding { Lat. 14° 58'·6 N No. 21 { Long. 17° 59'·9 W } 1100 fms. stf. gn. m.	
NOON.	Light NE breeze. Clear weather. Bar. 30·124 (81° F.). Temp. 72°·5 F. dry, 60°·7 F. wet. Sea surface 71°·2 F. Temp. of cable tank No. 3: 65° F. POSITION { Lat. 14° 53'·9 N. { Long. 17° 56'·9 W Distance to Dakar = 35 miles.	
P.M.	Sounding { Lat. 14° 53'·9 N { Long. 17° 56'·8 W } 940 fms. stf gn. m. Profile No. 3 completed. Set on for Dakar.	
0.6		

AT DAKAR.

---

SOUNDING.

---

PUTTING DOWN MARK BUOY.

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JANUARY 24TH TO JANUARY 26TH, 1893.



*Engineer's Log.—Sounding.*

S.S. "DACIA."

Hour.  
P.M.

**At Dakar.**

TUESDAY, JANUARY 24<sup>TH</sup>, 1893.

2.40	Sighted land.
3.55	Cape Verd Lighthouse abeam.
4.20	Madeline Island abeam.
4.40	Cape Manuel abeam.
5.15	Dropped starboard anchor in $4\frac{1}{2}$ fms. in Dakar Harbour.
6.30	MM. Borgela and Gégon, from the telegraph station at St. Louis, with Mr. E. March Webb, joined the ship. NOTE.—The results obtained in localising the break place it at about 120 miles from St. Louis.
8.15	Capt. Thomson and Mr. Sharp, second officer, went on shore to obtain observations for the correction of chronometers.

**SOUNDING.**

WEDNESDAY, JANUARY 25<sup>TH</sup>, 1893.

**Soundings along Line of Cable (No. 4).**

A.M.	
7.45	Hove up anchor and set on for grappling ground.
NOON.	Moderate NE breeze. Bar. 30.120 (73° F.). Temp. 72°·2 F. dry, 62°·2 F. wet. Sea surface 71° F.
	POSITION { Lat. 14° 45'·7 N. { Long. 17° 53'·0 W.
	Distance run since 8.40 a.m. = 25·0 N.M.
P.M.	
4.8	In position for taking a line of soundings from the South-west along the line of cable. Sounding { Lat. 14° 50'·7 N No. 23 { Long. 18° 10'·9 W } 1380 fms. No specimen. Wire broke. Lost 578 fms.
5.45	Sounding { Lat. 14° 53'·7 N No. 24 { Long. 18° 7'·8 W } 1350 fms. stf. gn. m.

HOUR. P.M.		WEDNESDAY, JANUARY 25TH, 1893— <i>contd.</i>	
		Soundings along Line of Cable (No. 4)— <i>contd.</i>	
7.29	Sounding { Lat. 14° 58'·4 N No. 25 { Long. 18° 4'·4 W } Wire broke.	1305 fms.	No specimen.
9.52	Sounding { Lat. 15° 6'·3 N No. 26 { Long. 18° 0'·1 W } 	1200 fms.	stf. gn. m.
10.53	Sounding { Lat. 15° 8'·8 N No. 27 { Long. 17° 59'·0 W } 	1190 fms.	stf. gn. m.

THURSDAY, JANUARY 26TH, 1893.

A.M.			
0.9	Sounding { Lat. 15° 11'·2 N No. 28 { Long. 17° 57'·7 W } 	1150 fms.	sft. gn. m.
1.20	Sounding { Lat. 15° 13'·4 N No. 29 { Long. 17° 56'·3 W } 	1120 fms.	v. stf. gy. m.
2.24	Sounding { Lat. 15° 15'·8 N No. 30 { Long. 17° 54'·8 W } 	1210 fms.	v. stf. gy. m.
3.59	Sounding { Lat. 15° 18' N No. 31 { Long. 17° 53'·4 W } 	1080 fms.	v. stf. gy. m.
4.45	Sounding { Lat. 15° 19'·8 N No. 32 { Long. 17° 52' W } 	1080 fms.	v. stf. gy. m.
6.32	Sounding { Lat. 15° 24'·3 N No. 33 { Long. 17° 49'·1 W } 	990 fms.	sft. gy. m.
7.39	Sounding { Lat. 15° 25'·8 N No. 34 { Long. 17° 47'·9 W } Specimen was almost a hard clay.	880 fms.	v. stf. gy. m.
8.31	Sounding { Lat. 15° 27'·4 N No. 35 { Long. 17° 46'·7 W } 	810 fms.	v. stf. gy. m.
9.30	Sounding { Lat. 15° 29' N No. 36 { Long. 17° 45'·5 W } 	790 fms.	stf. gy. m.
10.18	Sounding { Lat. 15° 30'·7 N No. 37 { Long. 17° 44'·3 W } 	790 fms.	stf. gy. m.
11.12	Sounding { Lat. 15° 32'·1 N No. 38 { Long. 17° 43'·2 W } 	840 fms.	stf. gy. m.

Hour.

THURSDAY, JANUARY 26TH, 1893—*contd.*

**Soundings along Line of Cable (No. 4)—*contd.***

NOON.

Fresh NE by N breeze. Weather clear. NNE swell.  
Bar. 30.144 (79° F.). Temp. 71°·2 F. dry, 62° F. wet. Sea  
surface 71°·2 F.

Temp. of cable tank No. 3 : 66° F.

POSITION { Lat. 15° 33' N.  
              { Long. 17° 41'·6 W.

P.M.

0.8

Sounding { Lat. 15° 33' N  
              { Long. 17° 41'·6 W } 860 fms. gn. gy. m.

Line of soundings No. 4 completed. These soundings  
have been taken along the line of cable from SW to NE over  
a distance of 50 miles.

---

**Putting down Mark Buoy (St. Louis side of break).**

In position for putting down Mark Buoy on line of cable  
on St. Louis side of break.

0.57

Commenced to lower mushroom.

1.45

Let go Mark Buoy No. 12. Red flag "B."

Moorings of buoy :

Mushroom=5 cwt. 0 qr. 21lbs.

20 fms. of  $\frac{3}{4}$ " chain.

1200 „ 4 × 4 buoy rope (6 lengths).

1 side rope (20 fms.).

1 bridle.

2 buoy lamps and hangers.

POSITION OF { Lat. 15° 34'·8 N.

MARK BUOY { Long. 17° 40' W.

2.30

Preparing to lower grapnel.

4.0

On account of the increasing wind and sea, and in view of  
the unfavourable appearance of the weather, grappling  
operations were suspended.

4.45

Sounding { Lat. 15° 35'·8 N  
              { Long. 17° 41'·8 W } 850 fms. stf. gy. m.

This sounding was taken a little to the Westward of line  
of cable near the position for grappling.

6.0

Strong NE by N wind.

Hour.  
A.M.

FRIDAY, JANUARY 27TH, 1893.

Steaming to St. Louis.

6.0 Close up to Mark Buoy. Blowing hard from NNE. Still too much wind and sea for grappling.

8.30 Wind and sea increasing. As it is impossible to commence grappling, it was determined to proceed to St. Louis so as to effect, while at anchor, certain necessary repairs in the engine room.

NOON.

Strong NNE wind and swell, with high cross sea.

Bar. 30.12 (73° F.). Temp. 70°·5 F. dry, 61°·2 F. wet. Sea surface 67°·2 F.

POSITION { Lat. 15° 43' N.  
Long. 17° 19' W.

Distance run since leaving Mark Buoy = 24 miles.

Distance from St. Louis = 50 miles.

Temp. of cable tank No. 3: 67° F.

P.M.

8.45 Stopped and sounded in 14 fms.

9.0 Observed St. Louis light bearing ENE.

9.20 Let go port anchor off St. Louis in 9½ fms.



AT ST. LOUIS.

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SOUNDING.

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JANUARY 28TH TO JANUARY 30TH, 1893.



*Engineer's Log.—Soundings.*

S.S. "DACIA."

Hour.	SATURDAY, JANUARY 28 <sup>TH</sup> , 1893.
A.M.	At St. Louis.
7.30	Heavy swell from the Northwards. Pirogue came alongside with letters for Mr. Benest. Sent mails on shore.
NOON	Clear weather. Moderate NNE wind. Bar. 30.116 (70° F.). Temp. 76°.2 F. dry, 65°.2 F. wet. Sea surface 64°.2 F.
P.M.	
4.0	Pirogue came alongside with letters. Wind and sea decreasing.
MIDNT.	Fresh NE breeze with moderate decreasing sea.

SUNDAY, JANUARY 29<sup>TH</sup>, 1893.

A.M.	
8.0	Wind and sea moderating.
10.30	Mr. A. P. Crouch, and M. Gantez, of the telegraph staff came on board. Further tests taken for localising break gave same results as previously obtained.
NOON	Moderate NE breeze. Clear weather. Decreasing sea. Bar. 30.100 (75° F.). Temp. 75° F. dry, 61° F. wet. Sea surface 61°.2 F.
P.M.	
8.30	Temp. of cable tank No. 3: 67° F. The weather having sufficiently moderated, the anchor was hove up and ship proceeded to grappling ground near Mark Buoy No. 12.

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**SOUNDING.**

MONDAY JANUARY 30<sup>TH</sup>, 1893.

**Profile across Line of Cable (No. 5).**

A.M.	
7.15	Up to Mark Buoy No. 12. Found flagstaff broken, and both Miller's globe lamps gone. Lowered boat and replaced flagstaff and red flag "B."
9.5	In position to take a profile line of soundings near grappling ground and across line of cable. Sounding { Lat. 15° 33'.1 N } 990 fms. stf. gn. m. No. 41 { Long. 17° 47'.7 W }

*Engineer's Log.—Sounding*

S.S. "DACIA."

Hour.  
A.M.

MONDAY, JANUARY 30TH, 1893—*contd.*

**Profile (5) across Line of Cable—*contd.***

10.0	Sounding { Lat. 15° 31'·6 N } 880 fms. stf. gn. m. No. 42 { Long. 17° 45'·7 W } This specimen dries to a grey colour
10.45	Sounding { Lat. 15° 30'·1 N } 800 fms. sft. gy. m. and s. No. 43 { Long. 17° 43'·6 W }
11.25	Sounding { Lat. 15° 28'·6 N } 785 fms. stf. m. No. 44 { Long. 17° 41'·6 W }
NOON.	ENE breeze. Bar. 30·098 (76° F.). Temp. 74°·2 F. dry, 62°·2 F. wet. Sea surface 68°·2 F. Temp. of cable tank No. 3: 67° F.
P.M. 0.35	POSITION { Lat. 15° 28'·4 N. { Long. 17° 43'·4 W. Sounding { Lat. 15° 27' N } 850 fms. sft. gn. m. No. 45 { Long. 17° 39'·6 W } Profile line of soundings, No. 5, completed. Set on for Mark Buoy No. 12.
2.15	Sent away cutter to buoy with fresh globe lamps.

GRAPPLING ON ST. LOUIS SIDE OF BREAK.

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BUOYING ST. LOUIS END.

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PICKING UP TOWARDS BREAK.

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JANUARY 30TH TO JANUARY 31ST, 1893.



Hour.  
P.M.

**Grappling for Cable on St. Louis side of Break.**

MONDAY, JANUARY 30TH, 1893—*contd.*

- 3.25 Lowered grapnel.  
1200 fms. of grappling rope.  
20 fms. of  $\frac{7}{8}$ " chain.  
1 Benest grapnel, 3 cwt. 3 qrs. 12 lbs.
- 3.50 Grapnel down. Commenced grappling to S.E.  
POSITION { Lat.  $15^{\circ} 35'.4$  N.  
              { Long.  $17^{\circ} 43'.2$  W.  
Buoy No. 12 bears  $S 78\frac{1}{2}^{\circ}$  E.  
Ship's course  $S 35^{\circ}$  W.
- 5.33 Strain 4 tons.
- 6.0 Picked up 50 fms. Cable appears to be hooked.  
Position { Lat.  $15^{\circ} 34'.6$  N.  
           { Long.  $17^{\circ} 42'.7$  W.
- 6.50 Commenced to pick up on grappling rope.

**Cable Hooked on St. Louis Side of Break.**

- 7.30 Cable off bottom. Buoy bears  $N 78^{\circ}$  E.
- 8.0 Heaving up steadily. Buoy bears  $N 82^{\circ}$  E.
- 8.55 Cable at bows. Strain = 5 tons.  
POSITION { Lat.  $15^{\circ} 34'.2$  N.  
           { Long.  $17^{\circ} 42'.2$  W.
- 9.0 Chain bent on. Cable cut. Spoke St. Louis. Tests show cable to St. Louis to be in thoroughly satisfactory condition. Instructed St. Louis to resume watch at Hut at 8.0 a.m. on Wednesday, February 1st. Sealed end carefully.

*Engineer's Log. — Sounding.*

S.S. "DACIA."

Hour.  
P.M.

MONDAY, JANUARY 30<sup>TH</sup>, 1893—*contd.*

**St. Louis End buoyed. Picking up Southwards  
towards Break.**

10.50

Buoyed St. Louis End. Moorings of buoy :—  
Mushroom=3 cwt. 2 qrs. 10 lbs.  
20 fms.  $\frac{5}{8}$ " chain.  
1000 fms. 4 x 4 buoy rope.  
 $\frac{3}{4}$ " bridle.  
10 fms.  $\frac{5}{8}$ " stay chain.  
Buoy, No. 23. Flag T.

POSITION { Lat. 15° 34'·2 N.  
Long. 17° 42' W.

11.0

Commenced picking up towards break, and coiling into  
No. 2 tank. Strain 2·6 tons.

11.50

Sounding { Lat. 15° 34'·2 N  
No. 46 { Long. 17° 42'·0 W } 860 fms. stf. gn. m.  
Cable coming up in perfect condition and coiling well.  
Average strain  $3\frac{1}{2}$  to  $4\frac{1}{2}$  tons. Maximum=6 tons.

TUESDAY, JANUARY 31<sup>ST</sup>, 1893.

A.M.  
8.0

Picking up continued throughout the night. Cable coming  
up in good condition and coiling well.  
10·6 N.M. of cable picked up. Light Deep Sea, Sec. "10 B."  
No. 2147.

Strain while picking up=4 tons; when stopped=2·1 tons.

NOON

16·66 N.M. of cable picked up.

POSITION { Lat. 15° 21'·9 N.  
Long. 17° 51'·4 W.

Moderate breeze, cloudy weather.

Bar. 30·066 (73° F.). Temp. 68°·2 F. dry, 61° F. wet. Sea  
surface 69°·2 F.

Temp. of cable tank No. 3: 67° F.

P.M.  
1.15

18·63 N.M. cable picked up.

Strain while picking up=4·0 tons; when stopped=2·2 tons

4.15

22·94 N.M. of cable picked up.  
Picking up strain= $4\frac{1}{2}$  tons.



*Engineer's Log.—Sounding.*

S.S. "DACIA."

HOURL.

TUESDAY, JANUARY 31<sup>ST</sup>, 1893—*contd.*

P.M.

**Picking up Southwards towards Break—*contd.***

4.45

23.44 N.M. of cable picked up.

Picking up strain=5.5 tons. Cable occasionally held at bottom, stopping frequently to let it break away.

5.0

23.5 N.M. of cable picked up.

Picking up strain rising to 6 tons.

Speed of picking up reduced to 0.9 N.M. per hour.

5.30

Picking up strain=5 to 6 tons. Cable held at bottom.

5.50

Picking up strain fell to 2.1 tons; cable coming up freely and shewing signs of much chafing, the outer ends being stripped and rucked up at places.

6.25

End on board. Tape, for some distance from end, quite rubbed off on one side of cable. The sheathing wires shewed evidence of considerable torsion at the break. About  $\frac{1}{2}$ " of conductor exposed outside core.

25.01 N.M. of cable picked up.

POSITION { Lat. 15° 18'.2 N.  
Long. 17° 58'.2 W.



SOUNDING.

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TURNING OVER AND SPLICING CABLE.

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JANUARY 31ST TO FEBRUARY 2ND, 1893.



Hour.

**SOUNDING.**

P.M.

TUESDAY, JANUARY 31<sup>ST</sup>, 1893—*contd.*

**Soundings to the ENE across Line of Cable (No. 6).**

6.41 The first sounding was taken immediately broken end came on board.

Sounding { Lat.  $15^{\circ} 18' \cdot 2$  N } 1220 fms. sft. gn. m.  
No. 47 { Long.  $17^{\circ} 57' \cdot 5$  W }

7.36 Sounding { Lat.  $15^{\circ} 17' \cdot 9$  N } 1280 fms. sft. gy. m.  
No. 48 { Long.  $17^{\circ} 56' \cdot 5$  W }

8.27 Sounding { Lat.  $15^{\circ} 17' \cdot 8$  N } 1180 fms. sft. gn. m.  
No. 49 { Long.  $17^{\circ} 55' \cdot 3$  W }

9.33 Sounding { Lat.  $15^{\circ} 17' \cdot 2$  N } 1080 fms. stf. gy. m.  
No. 50 { Long.  $17^{\circ} 52' \cdot 7$  W } This specimen much softer than preceding ones.

**Splicing Picked up Cable.**

10.54 Sounding { Lat.  $15^{\circ} 16' \cdot 8$  N } 1200 fms. v. sft. gn. m.  
No. 51 { Long.  $17^{\circ} 51' \cdot 2$  W }  
Line of soundings No. 6 completed.

11.50 Joint between the picked up cable pt. Sec. "10B" and Light Deep Sea pt. Sec. "9B" in No. 3 tank finished and tested.  
0.2132 cut off picked up cable at broken end for damaged sheathing (according to a subsequent measurement).  
14 fms. cut off cable in No. 3 tank for splice.

WEDNESDAY, FEBRUARY 1<sup>ST</sup>, 1893.

A.M.

0.15 Commenced splice between picked up cable and cable in No. 3 tank.

2.30 Splice finished. Commenced to coil the picked up cable from No. 2 tank on to top of cable in No. 3 tank.

**Soundings along Course of Diversion (No. 7).**

8.40 In position to take series of soundings along the probable course over which the cable may be relaid in the diversion, to the westward of the original line of cable.

Sounding { Lat.  $14^{\circ} 57' \cdot 2$  N } 1380 fms. sft. gy. m. and  
No. 52 { Long.  $18^{\circ} 13' \cdot 5$  W } gn. oz.

HOUR. A.M.	WEDNESDAY, FEBRUARY 1st, 1893— <i>contd.</i>
<b>Soundings along Course of Diversion (No. 7)—<i>contd.</i></b>	
11.1	Sounding { Lat. 15° 0'·8 N } 1320 fms. sft. gn. m. and No. 53 { Long. 18° 9'·3 W } gn. oz.
NOON.	Moderate ENE wind. Clear weather. NE swell. Bar. 30·052 (71° F.). Temp. 72°·2 F. dry, 61°·2 F. wet. Sea surface 67°·2 F.
P.M.	Temp. No. 3 cable tank: 67° F.
	POSITION { Lat. 15° 2'·6 N. { Long. 18° 10'·2 W.
0.13	Sounding { Lat. 15° 5'·3 N } 1390 fms. sft. gr. m. s. No. 54 { Long. 18° 11'·9 W } and gn. oz. Measurement made of the piece cut off (prior to making splice with cable in No. 3 tank) picked up cable at broken end for damaged sheathing. Length=0·2132 N.M.
2.45	Stopped turning over, picked up cable, and cut it in No. 2 tank. Measured piece remaining, cut off St. Louis End when cable was grappled. Length=1·04 N.M.
3.30	Sounding { Lat. 15° 13' N } 1470 fms. lt. gr. m. and No. 55 { Long. 18° 17'·9 W } gn. oz. Specimen has a yellowish tinge on top.
4.56	Sounding { Lat. 15° 17'·7 N } 1515 fms. y. and gn. m. No. 56 { Long. 18° 16' W } and oz.
6.0	All turning over of the picked up cable finished. LENGTH OF PICKED UP CABLE SPLICED ON TO SEC. "9B," AND TURNED OVER INTO NO. 3 TANK=23·7568 N.M. Cable recovered .. .. . 25·01 N.M. Cut off end at break 0·2132 (11.50 p.m., Jan. 31) Cut off St. Louis end 1·04 (2.45 p.m., Feb. 1) 1·2532 N.M.
	<u>23·7568 N.M.</u>
6.59	Sounding { Lat. 15° 22' N } 1460 fms. gn. m. No. 57 { Long. 18° 13'·4 W }
8.57	Sounding { Lat. 15° 24'·7 N } 1320 fms. gn. m. No. 58 { Long. 18° 12'·7 W }
10.36	Sounding { Lat. 15° 26'·8 N } 1210 fms. sft. gn. m. No. 59 { Long. 18° 0'·5 W }

Hour.

THURSDAY, FEBRUARY 2ND, 1893.

A.M.

Soundings along Course of Diversion (No. 7)—*contd.*

0.12 Sounding { Lat.  $15^{\circ} 28' 9''$  N } 1185 fms. sft. gn. m.  
No. 60 { Long.  $17^{\circ} 54' 7''$  W }

1.42 Sounding { Lat.  $15^{\circ} 31' 0''$  N } 960 fms. gy. m.  
No. 61 { Long.  $17^{\circ} 48' 5''$  W }

3.6 Sounding { Lat.  $15^{\circ} 33' 1''$  N } 862 fms. gy. m.  
No. 62 { Long.  $17^{\circ} 42' 2''$  W }

4.32 Sounding { Lat.  $15^{\circ} 35' 2''$  N } 870 fms. gn. m.  
No. 63 { Long.  $17^{\circ} 36' 0''$  W }  
Near buoy on St. Louis End of cable.  
Line of soundings No. 7 completed.

7.30 Up to buoy on St. Louis End of cable. Found it riding all right. Set on for position to grapple for the cable on Fernando side of break.

NOON.

Light NE by N wind. Fine clear weather. NNW swell. Bar. 30.060 ( $73^{\circ}$  F.). Temp.  $76^{\circ} 5$  F. dry,  $58^{\circ} 2$  F. wet. Sea surface  $67^{\circ} 5$  F.

POSITION { Lat.  $15^{\circ} 3' 6''$  N }  
{ Long.  $18^{\circ} 2' 7''$  W }

P.M.

1.59 Sounding { Lat.  $14^{\circ} 54' 4''$  N } 1280 fms. sft. gn. m. and  
No. 64 { Long.  $18^{\circ} 9' 5''$  W } oz.  
Near position for grappling for Fernando End.





PUTTING DOWN MARK BUOY ON FERNANDO  
SIDE OF BREAK.

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GRAPPLING FOR FERNANDO END.

---

BUOYING FERNANDO END.

---

PICKING UP CABLE TOWARDS BREAK.

---

SOUNDING.

---

FEBRUARY 2ND TO FEBRUARY 6TH 1893.



Hour.  
P.M.

Putting down Mark Buoy.

THURSDAY, FEBRUARY 2ND, 1893—*contd.*

3.54 Sounding { Lat.  $14^{\circ} 58' \cdot 6$  N  
No. 65 { Long.  $18^{\circ} 4' \cdot 1$  W } 1195 fms gn. m.

IN POSITION FOR LETTING GO MARK BUOY FERNANDO  
SIDE OF BREAK.

4.0 Lowering mushroom and buoy rope.

4.30 Let go Buoy No. 27 with blue flag.

Moorings of buoy:—

Mushroom=4 cwt. 6 qrs. 26 lbs.

20 fms. of  $\frac{11}{16}$ " chain.

1600 „  $3 \times 3$  buoy rope (new).

One side rope.

One  $\frac{5}{8}$ " bridle.

Buoy No. 27 (class 20), flagstaff and blue flag.

Lamp hangers and 2 Miller's globe lamps.

For position of buoy *see* Sounding No. 65.

Set course  $N 58^{\circ} W$  for position to put down grapnel.

5.30 Put down grapnel, but as the wind (NNE) and sea were increasing it was not considered safe to attempt to get hold of the cable. Ship was allowed to ride to grapnel.

10.30 The weather showing signs of becoming worse, commenced heaving grapnel up.

FRIDAY, FEBRUARY 3RD, 1893.

A.M.

2.25

Grapnel at bows.

Ship lying to, awaiting change of weather.

NOON.

Moderate NE by E wind. Very hazy. Sea moderating.

Bar. 30.054 ( $80^{\circ}$  F.). Temp.  $80^{\circ} \cdot 2$  F. dry,  $66^{\circ} \cdot 2$  F. wet.  
Sea surface  $69^{\circ} \cdot 2$  F.

POSITION { Lat.  $15^{\circ} 5' \cdot 5$  N.  
              { Long.  $18^{\circ} 8' \cdot 9$  W.

The extreme haziness is due to the air being filled with particles of fine sand. Ship and rigging completely covered with this dust, which probably comes from the desert.

Hour.  
P.M.

**Grappling for Fernando Side of Break.**

FRIDAY, FEBRUARY 3RD, 1893--*contd.*

**Cable Hooked.**

4.5	Buoy No. 27 abeam. Sent boat away with fresh lamps.
5.18	Commenced to lower grapnel.
7.12	Picked up 30 fms. of rope and took out a length, owing to damage caused by connection riding on drum.
7.33	Grapnel down. POSITION { Lat. 15° 1' N. { Long. 18° 8'·6 W. Benest's patent grapnel, 3 cwts. 3 qrs. 12 lbs. 20 fms. 9 $\frac{7}{8}$ " chain. 1699 fms. of 3 × 3 × 4 grappling rope.
7.47	Grappling strain=4 tons.
8.15	"          "          3·5 "
10.15	"          "          5·5 "
10.25	Cable apparently hooked. Picked up 64 fms. of rope.
10.29	Picking up. Strain rising to 6 tons. When stopped=3·5 tons.
11.37	Picking up. Strain 5 tons. When stopped=4·5 tons.
MDNT.	"          "          Strain 4 $\frac{1}{2}$ to 6 tons. When stopped=4·5 tons.

SATURDAY, FEBRUARY 4TH, 1893.

**Cable on Fernando Side of Break at Bows.**

**Buoying Fernando End.**

A M	457 fms. of rope out. Picking up. Strain=6 tons. When
1.45	stopped=5 tons.
3.0	Bight of cable at bows. Strain=4·5 tons.
	POSITION { Lat. 15° 0'·5 N. { Long. 18° 6'·5 W.

*Engineer's Log—Sounding.*

S.S. "DACIA."

Hour.  
A.M.

**Buoying Fernando End—*contd.***

SATURDAY, FEBRUARY 4TH, 1893—*contd.*

Side chains and drum ropes made fast to each side of bight. Cable cut. Fernando spoken and tests taken.

5.15 Tests towards Fernando being perfectly satisfactory, the Fernando End was sealed and buoyed.

Moorings of buoy:—

Mushroom=4 cwt. 1 qr. 10 lbs.

10 fms.  $\frac{5}{8}$ " chain.

1408 fms. of 4 × 4 buoy rope.

1 side rope.

$\frac{3}{4}$ " bridle.

Buoy No. 22 (Class 20), with flag R.

**Picking up towards Break on Fernando Side.**

6.8 POSITION OF BUOYED FERNANDO END :

Sounding { Lat. 15° 0'·8 N }  
No. 66 { Long. 18° 6'·2 W } 1260 fms. gy. m.

6.35 Let go buoy on Fernando End. Commenced picking up Northwards towards break. Coiling in No. 2 tauk.

7.28 0·673 N.M. of Light Deep Sea, Sec. "10B," No. 2147, picked up. Strain=3·5 tons.

8.30 2·4 N.M. picked up. Strain=4 tons.

10.0 5·3 " " " 4·5 "  
Cable coming up in good condition and coiling well.

11.0 7·4 N.M. picked up. Strain=4·5 tons.

NOON. 9·5 " " " 4 "

POSITION { Lat. 15° 9'·3 N }  
{ Long. 18° 4'·1 W.

Light NNE wind. Sea calm. Still hazy, but less dust noticed.

Bar. 30·918 (77° F.). Temp. 77°·2 F. dry, 65°·2 F. wet. Sea surface 67°·2 F. Ship's engines=24 revs. per min.

P.M.  
2.0 13·15 N.M. picked up. Strain=3·5 tons. When stopped=2·1 tons.

Cable in good condition and coiling well.

Weather much clearer.

HOOR.  
P.M.

**Picking up on Fernando Side of Break—*contd.***

SATURDAY, FEBRUARY 4TH, 1893—*contd.*

4.0	16.6 N.M. picked up. Strain=4.5 tons. Fresh NE breeze. Cable in good condition and coiling well.
4.40	Sounding { Lat. 15° 15'·5 N No. 67 { Long. 17° 59'·5 W } 1160 fms. gn. m. Picking up. Strain=4.5 tons.
5.10	„ „ 5.5 „
5.39	Strain fell from 5 to 3.5 tons.
5.45	Picking up. Strain=5.5 „
5.48	Strain suddenly fell from 4 to 2.2 tons.
5.52	„ „ „ „ 5.5 to 3.5 „
6.0	19.01 N.M. picked up. Strain rising and falling between 4 and 2.1 tons.
6.30	Cable coming in screwy and coiling badly. 20.01 N.M. picking up.
6.45	20.5 N.M. picked up. Cable shewing evidence of much chafing; outside ends and tape rubbed off in places.
6.56	Broken end of cable at bows. The outside ends and tape completely gone for the last 43 fms. 20.57 N.M. OF CABLE RECOVERED.
7.2	Sounding { Lat. 15° 17'·7 N No. 68 { Long. 17° 58'·5 W } 1220 fms. gn. m. THIS SOUNDING GIVES POSITION OF BROKEN END.
8.30	The part of the cable near broken end being damaged, was turned over into No. 1 tank and cut off. MEASUREMENT OF PIECE CUT OFF=1.483 N.M. Ship laying to all night.

*Engineer's Log.—Sounding.*

S.S. "DACIA."

Hour. A.M.	Sounding in Neighbourhood of Break.
SUNDAY, FEBRUARY 5TH, 1893.	
Splicing up and Turning over Recovered Cable.	
6.0	Commenced joint between cable in No. 2 tank (picked up on Fernando side of break) and cable in No. 3 tank (picked up on St. Louis side of break). All Light Deep Sea types, No. 2147.
P.M. 7.57	Sounding { Lat. 15° 7'·9 N No. 69 { Long. 17° 55' W } } 1050 fms. gn. m. On obtaining sights, this position was found to be too far to the Eastward; the ship was therefore steamed 12 miles to the Westward.
9.0	Joint ( <i>see</i> 6.0 a.m.) finished. Splice commenced.
10.40	Sounding { Lat. 15° 3'·7 N } 1305 fms. sft. gn. m. and oz. No. 70 { Long. 18° 8'·5 W } (yellowish tinge on surface).
10.45	Splice finished. Commenced transferring cable from No. 2 tank to No. 3 tank.
NOON.	Light NNE breeze. Cloudy, with a low-lying haze. Bar. 30·016 (77° F.). Temp. 72°·2 F. dry, 64°·5 F. wet. Sea surface 69°·2 F. POSITION { Lat. 15° 3'·7 N. Long. 18° 8'·5 W. Set on for buoy on St. Louis End. Steaming slowly
MONDAY, FEBRUARY 6TH, 1893.	
Visiting Mark Buoys.	
A.M. 6.45	Up to Mark Buoy 12, near St. Louis buoyed End. Sent away boats with fresh lights for both buoys.
7.20	Set on for buoy on Fernando End.
7.40	Cut the cable being transferred from No. 2 tank to No. 3 tank. Turned the piece cut off into No. 1 tank.

Hour.

Visiting Mark Buoys—*contd.*

MONDAY, FEBRUARY 6TH, 1893—*contd.*

LENGTH=2·891 N.M.

LENGTH OF PIECE TURNED OVER INTO NO. 3 TANK, AND  
SPliced ON CABLE IN THAT TANK=16·196 N.M.

Viz.—cable recovered= 20·57 N.M.

„ —end at break=1·483 (8.30 P.M., Feb. 4)

„ —Fernando End=2·891 (7.40 P.M., Feb. 5) 4·374 „

16·196 N.M.

NOON.

Light N'y breeze. Fine weather. Some swell from NNE.  
Bar. 30° (74° F.). Temp. 71°·7 F. dry, 65°·5 F. wet. Sea  
surface 68°·2 F.

POSITION { Lat. 15° 1'·3 N.  
                  { Long. 18° 5'·7 W.



SPLICING ON TO FERNANDO END.

---

PAYING OUT TOWARDS ST. LOUIS END.

---

COMPLETION OF REPAIRS.

---

AT DAKAR.

---

FEBRUARY 6TH TO FEBRUARY 8TH, 1893.



*Engineer's Log.*  
S.S. "DACIA."

Hour.  
P.M.

At Dakar.

Picking up on Fernando End.

MONDAY, FEBRUARY 6TH, 1894—*contd.*

- |      |   |
|------|---|
| 0.20 | Up to buoy on Fernando End. Sent away port cutter to shackle on drum rope.  |
| 0.24 | Buoy up in starboard fore rigging.  |
| 0.27 | Commenced to pick up on drum rope   |
| 1.23 | Picking up. Strain=2.9 tons.  |
| 1.29 | Cable at bows.  |
| 1.36 | Picking up on cable towards Fernando, to make certain that no strained part or kink existed.<br>Strain=4 tons.      |
| 2.20 | 1.04 N.M. picked up.  |
| 2.35 | Stopped picking up. Cut cable.<br>1.25 N.M. PICKED UP.<br>Fernando spoken. Cable tested; very satisfactory results. |

Paying out towards Buoy on St. Louis End.

---

Splicing Fernando End to Cable on Board.

- |      |  |
|------|--|
| 3.50 | Fernando End, and end of top piece in No. 3 tank opened out for jointing.<br>0.014 N.M. CUT OFF FERNANDO END FOR SPLICE. |
| 5.20 | Joint finished and tested.   |
| 7.30 | Splice finished. Bight slipped from aft. Commenced to pay out towards buoy on St. Louis End.<br>COURSE=N 26° W.          |

Hour.	Paying out towards Buoy on St. Louis End— <i>contd.</i>
P.M.	MONDAY, FEBRUARY 6TH, 1893— <i>contd.</i>
7.42	SPLICE between Fernando End, pt. Sec. "10," Light Deep Sea, and picked up cable on board, pt. Sec. "10," Light Deep Sea, passed out. POSITION { Lat. 15° 0'·2 N } OF SPLICE { Long. 18° 7'·1 W } 1280 fms. Weather overcast and cloudy. Sea smooth. No observations could be taken after 8 p.m.
8.30	3·578 N.M. PAID OUT. Patent log=1·9 N.M. Dynamometer=2200 lbs. Weight on brake=1020 lbs. Ship's engines=31 revs. per min. Depth=1350 fms.
9.0	5·755 N.M. PAID OUT. Patent log=3·1 N.M. Dynamometer=2100 lbs. Weight on brake=3200 lbs. Ship's engines=36 revs. per min. Depth=1400 fms. 10·79 N.M. PAID OUT. Patent log=6 N.M. Dynamometer=2000 lbs. Weight on brake=1140 lbs. Ship's engines=36 revs. per min. Drum=30 revs. per min.=5·68 N.M. per hour.
10.0	Brakes have been working badly, jumping and sticking, from the commencement of paying out. A good deal of intermittent friction caused by spur on cross bar above brake-straps grinding against edge of inside of brake wheels. The cross bar was removed. Brakes frequently bringing up, sending strain up to 5000 and 6000 lbs. Impossible to carry with any regularity the strain required to give the necessary slack.
10.30	13·32 N.M. PAID OUT. Patent log=7·8 N.M. Dynamometer=2000 lbs. Weight on brake=1140 lbs. Ship's engines=38 revs. per min. Drum=27 revs. per min.=5·1 N.M. per hour.
11.0	15·94 N.M. PAID OUT. Patent log=9·6 N.M. Dynamometer=1600 lbs. Weight on brake=1200 lbs. Ship's engines=40 revs. per min. Drum=28 revs. per min.=5·3 N.M. per hour.

*Engineer's Log.*

S.S. "DACIA."

Hour.      **Paying out towards Buoy on St. Louis End—contd.**

P.M.                      **MONDAY, FEBRUARY 6TH, 1893—contd.**

11.5              SPLICE between pt. Sec. "10" and pt. Sec. "10," picked up cable, passed out.

16.06 N.M. PAID OUT.

POSITION { Lat. 15° 8' 8 N  
OF SPLICE { Long. 18° 12' 3 W } 1400 fms.

Length of first piece paid out of picked-up cable, Sec. "10"  
=16.06 N.M.

11.30              18.80 N.M. PAID OUT.

Patent log=12.0 N.M.

Dynamometer=1900 lbs. Weight on brake=1260 lbs.

Ship's engines=40 revs per min.

Drum=29 revs. per min.=5.49 N.M. per hour.

MIDNT.              21.75 N.M. PAID OUT.

Patent log=14.4 N.M.

Dynamometer=1800 lbs. Weight on brake=1420 lbs.

Ship's engines=40 revs. per min.

Drum=31 revs. per min.=5.87 N.M. per hour.

CHANGE OF COURSE=N 19½° E.

POSITION { Lat. 15° 12' 7 N  
                 { Long. 18° 14' 5 W } 1450 fms.

Paid out on last course N 26° W=21.7 N.M.

Distance overground . . . =14.35 N.M.

Slack . . . . . =52.5 %.

Light Nly airs. Fine weather. Slightly overcast. Sea smooth.

Bar. 30.126 (74° F.). Temp. 70° F. dry, 65° 2 F. wet. Sea surface 66° 2.

**TUESDAY, FEBRUARY 7TH, 1893.**

A.M.

0.30

24.57 N.M. PAID OUT.

Patent log=16.9 N.M.

Dynamometer=1200 lbs. Weight on brake=1320 lbs.

Ship's engines=40 revs. per min.

Drum=31 revs. per min.=5.87 N.M. per hour.

1 0

27.55 N.M. PAID OUT.

Patent log=19.6 N.M.

Dynamometer=1300 lbs. Weight on brake=1560 lbs.

Ship's engines=40 revs. per min.

Drum=32 revs. per min.=6.06 N.M. per hour.

Hour.	Paying out towards Buoy on St. Louis End— <i>contd.</i>
A.M.	
1.30	TUESDAY, FEBRUARY 7TH, 1893— <i>contd.</i>
	30.65 N.M. PAID OUT. Patent log=22 N.M. Dynamometer=1700 lbs. Weight on brake=1620 lbs. Ship's engines=40 revs. per min. Drum=33 revs. per min.=6.25 N.M. per hour.
2.0	33.72 N.M. PAID OUT. Patent log=24.5 N.M. Dynamometer=1200 lbs. Weight on brake=1620 lbs. Ship's engines=40 revs. per min. Drum=33 revs. per min.=6.25 N.M. per hour.
2.30	36.39 N.M. PAID OUT. Patent log=26.9 N.M. Dynamometer=1200 lbs. Weight on brake=1620 lbs. Ship's engines=40 revs. per min. Drum=30 revs. per min.=5.68 N.M. per hour CHANGE OF COURSE=N 72° E. POSITION { Lat. 15° 24'.4 N } 1340 fms. { Long. 18° 10'.5 W } Paid out on last course N 19½° E =14.7 N.M. Distance overground . . . =12.3 N.M. Slack . . . . . =19.2 %.
3.0	39.65 N.M. PAID OUT. Patent log=29.4 N.M. Dynamometer=1100 lbs. Weight on brake=1740 lbs. Ship's engines=40 revs. per min. Drum=33 revs. per min.=6.25 N.M. per hour. SPLICE between pt. Sec. "10" picked up cable and Sec. "9B" new cable, passed out. Length of second piece paid out of picked up cable pt. Sec. "10"=23.59 N.M. POSITION { Lat. 15° 25' N } 1330 fms. OF SPLICE { Long. 18° 7'.6 W }
3.30	42.53 N.M. PAID OUT. Patent log=31.9 N.M. Dynamometer=1600 lbs. Weight on brake=1860 lbs. Ship's engines=40 revs. per min. Drum=32 revs. per min.=6.06 N.M. per hour.

*Engineer's Log.*

S.S. "DACIA."

HOUR. A.M.	Paying out towards Buoy on St. Louis End— <i>contd.</i>
TUESDAY, FEBRUARY 7TH, 1893— <i>contd.</i>	
4.0	<p>45·65 N.M. PAID OUT.  Patent log=34·3 N.M.  Dynamometer=1500 lb. Weight on brake=1860 lbs  Ship's engines=40 revs. per min.  Drum=33 revs. per min.=6·25 N.M. per hour.  Weather fine but overcast. Light NNE breeze. Sea smooth.  Bar. 29·998 (74° F.). Temp. 68°·2 F. dry, 64°·7 F. wet. Sea surface 65°·1 F.</p>
4.30	<p>48·92 N.M. PAID OUT.  Patent log=36·7 N.M.  Dynamometer=1600 lbs. Weight on brake=1800 lbs.  Ship's engines=40 revs. per min.  Drum=30 revs. per min.=5·68 N.M. per hour.</p>
5.0	<p>51·59 NM. PAID OUT.  Patent log=39·1 N.M.  Dynamometer=1600 lbs. Weight on brake=1800 lbs.  Ship's engines=40 revs. per min.  Drum=30 revs. per min.=5·68 N.M. per hour.</p>
5.30	<p>54·57 N.M. PAID OUT.  Patent log=41·4 N.M.  Dynamometer=1600 lbs. Weight on brake=1800 lbs.  Ship's engines=40 revs. per min.  Drum=32 revs. per min.=6·06 N.M. per hour.</p>
6.0	<p>57·53 N.M. PAID OUT.  Patent log=44·1 N.M.  Dynamometer=1600 lbs. Weight on brake=1800 lbs.  Ship's engines=40 revs. per min.  Drum=31 revs. per min.=5·87 N.M. per hour.</p>
6.30	<p>60·07 N.M. PAID OUT.  Patent log=46·2 N.M.  Dynamometer=1600 lbs. Weight on brake=1800 lbs.  Ship's engines=30 revs. per min.  Drum=31 revs. per min.=5·87 N.M. per hour.</p>
6.35	<p>Ship's engines slowed down to 26 revs. per min.</p>
6.47	<p>SPLICE between Light Deep Sea, Sec. "9B," and Light Deep Sea, Sec. "5," passed out.</p>

# Engineer's Log.

S.S. "DACIA."

Hour.

A.M.

Paying out towards Buoy on St. Louis End—*contd.*

TUESDAY, FEBRUARY 7TH, 1893—*contd.*

61.10 N.M. PAID OUT.

POSITION { Lat.  $15^{\circ} 30' \cdot 3$  N } 1050 fms.  
OF SPLICE { Long.  $17^{\circ} 50' \cdot 4$  W }

Length of Light Deep Sea, pt. Sec. "9B," paid out = 21.45 N.M.

7.0

61.69 N.M. PAID OUT.

Dynamometer = 1600 lbs. Weight on brake = 1620 lbs.  
Ship's engines = 36 revs. per min.  
Drum = 28 revs. per min. = 5.3 N.M. per hour.

7.20

FACTORY SPLICE in Sec. "5" passed out.

63.66 N.M. PAID OUT.

7.30

64.49 N.M. PAID OUT.

Patent log = 49.5 N.M.

Dynamometer = 1600 lbs. Weight on brake = 1620 lbs.  
Ship's engines = 40 revs. per min.  
Drum = 28 revs. per min. = 5.3 N.M. per hour.

7.45

Increased ship's engines to 45 revs. per min.

7.54

" " " 48 "

7.56

FACTORY SPLICE in Sec. "5" passed out.

66.17 N.M. PAID OUT.

8.0

67.17 N.M. PAID OUT.

Patent log = 52 N.M.

Dynamometer = 1640 lbs. Weight on brake = 1800 lbs.  
Ship's engines = 48 revs. per min.  
Drum = 33 revs per min. = 6.25 N.M. per hour.

CHANGE OF COURSE = N  $60^{\circ}$  E.

POSITION { Lat.  $15^{\circ} 31' \cdot 4$  N } 890 fms.  
{ Long.  $17^{\circ} 46' \cdot 1$  W }

Paid out on last course N  $72^{\circ}$  E = 30.8 N.M.

Distance overground . . = 24.5 "

Slack . . . = 25.7%.

8.15

FACTORY SPLICE in Sec. "5" passed out.

68.8 N.M. PAID OUT.

Ship's engines increased to 50 revs. per min.



*Engineer's Log.*  
S.S. "DACIA."

Hour. A.M.	
	<b>Paying out towards Buoy on St. Louis End—<i>contd.</i></b>
	<b>TUESDAY, FEBRUARY 7TH, 1893—<i>contd.</i></b>
8.30	<p>70·2 N.M. PAID OUT.  Patent log=55·3 N.M.  Dynamometer=700 lbs. Weight on brake=1860 lbs.  Ship's engines=50 revs. per min.  Drum=34 revs. per min.=6·43 N.M. per hour.  Sighted Cable Buoy. Distant 2 miles.  CHANGE OF COURSE=N 42° E.  POSITION { Lat. 15° 32'·7 N } 850 fms.                    { Long. 17° 43' W }  Cable paid out on last course N 60° E=3 N.M.</p>
8.50	Up to buoy on St. Louis End. Sent cutter away to shackle on drum rope.
8 52	<p>CHANGE OF COURSE=NE.  POSITION { Lat. 15° 34'·2 N } 860 fms.                    { Long. 17° 42' W }  Cable paid out on last course N 42° E=2·1 N.M.</p>
9.0	<p>72·31 N.M. PAID OUT.  Dynamometer=1800 lbs. Weight on brake=960 lbs.  Drum=33 revs. per min.=6·25 N.M. per hour.</p>
	<b>Up to Buoy on St. Louis End. Picking up towards St. Louis.</b>
9.2	<p>FACTORY SPLICE in Sec. "5," passed out.  72·41 N.M. PAID OUT.  Patent log=52·1 N.M.  Commenced to pick up on drum rope.</p>
9 10	<p>Buoy hoisted up.  Paying out on Fernando cable as required.</p>
10.0	<p>72·89 N.M. PAID OUT.  Dynamometer=2200 lbs. Weight on brake=960 lbs.  Drum=23 revs. per min.=4·35 N.M. per hour.</p>
10.10	St. Louis End on board. Spoke and tested cable to St. Louis. Results perfectly satisfactory.

Hour.  
A.M.

Up to Buoy on St. Louis End. Picking up towards  
St. Louis—*contd.*

TUESDAY, FEBRUARY 7TH, 1893—*contd.*

10.30	Picking up on St. Louis End continued. Paying out on Fernando cable as required. 73.19 N.M. PAID OUT. Dynamometer=2400 lbs. Weight on brake=1080 lbs.
11.0	73.4 N.M. PAID OUT. Dynamometer=2400 lbs. Weight on brake=1140 lbs.
11.3	Stopped paying out and cut cable. 73.53 N.M. TOTAL CABLE PAID OUT FROM SPLICE WITH FERNANDO END. Paid out of Sec. "5"=12.43 N.M. Cable paid out on last course NE=1.2 N.M. " " " since change of course at 8.0 a.m.=6.36 N.M. Distance overground . . . . . =5.85 " Slack . . . . . =10.5°/.
11.55	Stopped picking up on St. Louis End, and cut cable. 0.25 N.M. PICKED UP ON ST. LOUIS END.
NOON.	Moderate NNE wind. Fine, clear weather. Sea smooth. Bar. 30.036 (78° F.). Temp. 79°2 F. dry, 69°2 F. wet. Sea surface 67° F. POSITION { Lat. 15° 34'.5 N. Long. 17° 41'.5 W.

**Final Splice. Slipping Final Bight.**

P.M.

0.30	Commenced joint between the St. Louis and Fernando Ends. 0.014 N.M. Cut off St. Louis End for splice.
2.10	Joint finished and tested. Commenced splice.
3.40	Splice finished.
4.0	Slipped final bight. Repairs completed. POSITION { Lat. 15° 34'.5 N FINAL SPLICE { Long. 17° 41'.5 W } 860 fms.

TUESDAY, FEBRUARY 7TH, 1893—*contd.*

SUMMARY OF CABLE LAID IN REPAIRS.

FERNANDO END.	Sec. "10" Light	Deep	Sea,	No. 2147,	}	16.06	N.M.
	recovered cable	..	..	..			
	Sec. "10" Light	Deep	Sea,	No. 2147,	}	23.59	"
	recovered cable	..	..	..			
ST. LOUIS END.	Sec. "9B" Light	Deep	Sea,	No. 2147,	}	21.45	"
	new cable	..	..	..			
	Sec. "5" Light	Deep	Sea,	No. 2147,	}	12.43	"
	new cable	..	..	..			
Hour.						73.53	N.M.

P.M.  
4.30

Set on for Dakar. Mark Buoys left in their places until the results of final tests have been ascertained.

At Dakar.

WEDNESDAY, FEBRUARY 8TH, 1893.

A.M.  
7.5

Anchored in 5 fms. in Dakar Harbour.

Results of final tests, taken by Mr. Crouch at St. Louis, are extremely satisfactory

NOTE.—The ship left Dakar on the 11th, proceeding to St. Louis and Tenerife for repairs to underground lines at these places. The Mark Buoys were picked up *en route*.



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POSITION SHEETS.

Nos. 1 AND 2.

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## GRAPPLING AND PICKING UP CABLE.

POSITIONS, COURSES, AND LENGTHS OF CABLE PICKED UP.

Date.	Time.	* Positions.		Courses Made Good.	Cable Picked Up.		Average Depth,	Remarks.
		Latitude N.	Longitude W.		Between Positions.	Total.		
ST. LOUIS SIDE OF BREAK.								
1892.		-°	'	°	'		Fms.	
30th Jan.	3.50 p.m.	15	35.4	17	43.2	...	850	Grapple down St. Louis End.
"	6.0 "	15	34.6	17	42.7	...	...	Cable hooked
"	8.35 "	15	34.2	17	42.2	...	...	Cable at bows
"	10.50 "	15	34.2	17	42.0	...	857	Buoyed
"	11.0 "	...	...	...	...	...	...	Picking up Southwards towards break.
31st "	Noon.	15	21.9	17	51.4	...	...	"
"	2.9 p.m.	15	19.6	17	53.6	16.6	1035	"
"	4.30 "	15	18.6	17	56.0	3.4	1100	"
"	6.25 "	15	18.2	17	58.2	3.4	1200	"
						1.61	1220	"
						25.01		Broken end at bows.
FERNANDO SIDE OF BREAK.								
3rd Feb.	7.33 p.m.	15	1.0	18	8.6	...	1300	Grapple down Fernando End.
4th "	3.0 a.m.	15	0.5	18	6.5	...	...	Cable at bows
"	6.35 "	15	0.8	18	6.2	...	1260	Buoyed
"	6.45 "	...	...	...	...	...	...	Picking up Northwards towards break.
"	8.10 "	15	2.2	18	5.1	...	...	Change of course.
"	10.0 "	15	6.5	18	3.9	1.7	1280	"
"	Noon.	15	9.3	18	4.1	3.6	1200	"
"	2.5 p.m.	15	11.1	18	3.6	3.8	1210	"
"	4.7 "	15	13.7	18	0.9	3.9	1300	"
"	6.56 "	15	17.7	17	58.5	3.7	1160	"
						3.87	1220	Broken end at bows.

\* Seconds of a degree are expressed in decimals of a minute.

SOUTH AMERICAN CABLE REPAIRS. S.S. "DACIA."  
FERNANDO NORONHA—ST. LOUIS SECTION.

POSITION SHEET  
No. 2.

## DIVERSION OF CABLE.

POSITIONS, COURSES, DISTANCES AND LENGTHS OF CABLE PAID OUT.

Date.	Time.	Positions.*		Courses (true) Made Good.	Distance Overground.		Cable Paid Out.		Slack Paid Out.		Slack, per cent.		Remarks.
		Lat.	Long.		Between Positions.	Total.	Between Positions.	Total.	Between Positions.	Total.	Between Positions.	Total.	
1893 Feb. 2	4.30 p.m.	14 58-6	18 4-1	...	...	...	...	...	...	...	...	...	fms. 1195
"	4 5.15 a.m.	15 0-8	18 6-2	...	...	...	...	...	...	...	...	...	1230
"	6† 7.42 p.m.	15 0-2	18 7-1	N 26° W	...	...	...	...	...	...	...	...	1230
"	" 11.0 "	15 8-8	18 12-3	...	...	...	...	...	...	...	...	...	1400
"	" Midnt.	15 12-7	15 14-5	N 19½° E	14-35	21-7	7-35	7-35	52-5	52-5	...	...	1450
"	7 2.30 a.m.	15 24-4	18 10-5	N 72° E	12-30	26-65	14-7	36-4	2-4	9-75	19-2	36-6	1340
"	" 3.3 "	15 25-0	18 7-6	...	...	...	...	...	...	...	...	...	1330
"	" 6.47 "	15 30-3	17 50-4	...	...	...	...	...	...	...	...	...	1050
"	" 8.0 "	15 31-4	17 46-1	N 60° E	24-45	51-10	30-8	67-2	6-35	16-1	25-9	31-5	890
"	" 8.30 "	15 32-7	17 43-3	N 42° E	...	...	3-0	70-2	...	...	...	...	850
"	" 8.52 "	15 34-2	17 42-0	NE	...	...	2-1	72-3	...	...	...	...	860
"	† 4.0 p.m.	15 34-5	17 41-5	...	5-75	56-85	1-23	73-53	0-58	16-68	10-5	31-4	860
Jan. 30	10.50 "	15 34-2	17 42-0	...	...	...	...	...	...	...	...	...	857
"	26 1.45 "	15 34-8	17 40-0	...	...	...	...	...	...	...	...	...	860

\* Seconds of a degree are expressed in decimals of a minute.

† After picking up 1-25 n.m. from buoyed end towards Fernando.

St. Louis.



REPAIRS TO THE SOUTH AMERICAN CABLE.

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ELECTRICAL REPORT.



# INDEX TO ELECTRICAL REPORT.

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	PAGE.
General Report .. .. .	689
Lengths, Types, and 75°s of Cables shipped on board S.S. "Dacia" off Works.. .. .	699
Values at 75°s of Cable as spliced up prior to Repairs ..	702
Tests on Cable on board "Dacia" .. .. .	703
Details of Alterations of Lengths in the St. Louis—Fernando Noronha Section .. .. .	705
Rough Diagram showing Repairs (facing p. 708).	
Table showing approximate positions of Cable laid during Repairs (facing p. 718).	
Cable Lengths, with corresponding Depths and Temperatures at St. Louis End—Tables A and B .. .. .	711
Sub-division of Section after Repairs—Table C .. .. .	714
Table of 75°s, with Lengths, Depths, and Bottom Tempera- tures and Positions of Splices of Section after Repairs ..	717
Tests taken at various periods during Repairs.. .. .	719
Comparison between various actual Tests and calculated Values—Table D. .. .. .	722
Final Tests .. .. .	723
Expenditure Table .. .. .	725
Summary of Events .. .. .	729



SOUTH AMERICAN CABLE REPAIRS.

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GENERAL ELECTRICAL REPORT.



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South American Cable Repairs.

DEAR SIR,

News was received in London on December 26th, 1892, that the St. Louis—Fernando Noronha Section had completely broken down on that day; rough tests taken at St. Louis indicated that the break was at about 130 miles distant.

The "Dacia" was immediately prepared for sea, and she left the Thames on January 7th, 1893.

On January 21st the ship anchored off St. Louis, Senégal, and two hours after her arrival Mr. Crouch and I went ashore in a native canoe. It may not be out of place to observe that on all occasions of our visiting St. Louis, even in pretty bad weather, we were served with the greatest readiness and promptitude by the native canoe men under their chief, Madoun. Mr. Crouch landed to take charge of the St. Louis End during the repairs, while my visit was only a temporary one, for the purpose of obtaining further and more definite localisations of the fault or break.

The ship left St. Louis the same evening for sounding, and I rejoined her at Dakar on January 24th, having proceeded thither by rail. Mons. Borgela, the superintendent of the combined Spanish National and South American Companies' office, with Mons. Gégore, operator, joined the ship at Dakar in order to be present during the repairing operations.

You will recollect that on the landing of the Shore-End, a considerable bight, due to the very strong in-shore current, had been unavoidably made in the Shore-End, extending from high-water mark to some little distance to seaward of low-water mark. This bight had, to a

considerable degree, been straightened out, and the slack cable coiled down under the cable house, by Mons. Borgela, before the interruption to the section.

On December 20th, 1892, both St. Louis and Fernando were receiving messages with some difficulty for the first time since the laying of the cable, and the speed of working had to be reduced by about a third. On December 24th a very heavy sea was breaking on the beach, the precursor of a violent storm, which raged until the morning of the 26th. On the afternoon of the 24th the heavy seas had shifted the cable, between high and low-water marks, considerably to the southward of the position Mons. Borgela had placed it in, and it had been drifted into a most extraordinary series of zig-zags; fortunately nothing in the shape of kink could be discovered. During the storm the cable, which had been previously buried by the tides to a depth of about six feet, was completely exposed from close to the hut down to low-water mark. It was very shortly afterwards covered up again to the depth of about a foot, except in two places, where it showed above the sand for a distance of about two feet between high and low water marks. No danger need be apprehended from the temporary uncovering of the cable, as it is an incident only likely to occur at very rare intervals. We may take, as an instance, the case of the cables to Tenerife and to Yof Bay; these have not been once exposed during the last three years, so deeply have they sunk in the sandy beach.

Some idea of the violence of the storm may be gathered from the fact that the seas washed through the roadway in front of the cable house and flooded a considerable portion of the native town.\*

The signals between St. Louis and Fernando continued of the same unsatisfactory character till the closing of the office on the night of the 25th, when the storm was at its height. On the morning of the 26th the cable was found to be completely interrupted.

I found that Mons. Gantes, a member of the staff at St. Louis, had taken a considerable number of tests, and had localised the break at between 125 and 130 miles distant. These tests consisted of direct

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\* Some remarks on the shifting of the beach at St. Louis will be found in the Electrical Report on the Repairs to the St. Louis Underground Cables.



copper resistance taken on the bridge coils with alternate zinc and carbon reversals using a battery of 20 Leclanché cells.

On proceeding to take further tests for the localisation of the fault, I found the earth currents to be very variable both as regards direction and strength, though never much exceeding one-third of a Leclanché cell in electromotive force.

All tests were remarkably steady, the greatest divergence placing the break at 24 miles beyond its actual distance, which was subsequently found to be 113 knots from St Louis.

The following are a few of the most reliable tests taken; they are selected from a great number and from a variety of methods of localisation.

Distance to Break. N.M.	No. of Cells used (Leclanché).	Nature of Test.		
121.8	28	Quick Reversals.	Bridge.	
119.13	28	Fahie.		
121.82	28	"		
119.63	54	Quick Reversals.	Bridge.	
119.7	54	Fahie.		
119.13	60	Quick Reversals.	Bridge.	
119.62	60	Fahie.		
119.53	60	Quick Reversals.	Bridge.	
118.03	60	"	"	Slides.
121.82	60	"	"	"

For the calculation of the copper resistance per knot a mean bottom temperature of  $44^{\circ}$  was adopted, assuming the break to be, at the furthest, 130 miles distant. This temperature was obtained from previous tests and temperature soundings. The true mean bottom temperature was subsequently found to be  $44^{\circ}.9$ .

Circumstances did not permit of our receiving any reliable tests from Fernando. The few which did come to hand were practically useless as giving any indication of the position of the break.

On January 24th the ship proceeded to sea for further sounding, and on January 26th a Mark Buoy was put down in 850 fathoms, near the position determined on for grappling on the St. Louis side of the break. We were, however, unable to lower the grapnel,

on account of the fast increasing sea and wind. The time was occupied in taking additional soundings until January 30th, when, the weather having moderated, we commenced grappling at 3.30 p.m. At 9.30 p.m. we had the cable on board, having succeeded in hooking it on the first drag.

After cutting and speaking St. Louis the cable was tested and found to be in a perfectly satisfactory condition. Several tests both for C.R. and capacity (null method from on board, and null method and direct discharge from shore) were taken by ship and shore for the purpose of determining the length of cable between the ship and St. Louis. All results agreed very closely in placing the cut at 87·888 n.m. from shore. The dielectric resistance at temperature was 9028·7 megohms, with a conductor resistance of 5·03 ohms and a calculated mean bottom temperature of 46°·75 F. The mean depth on this length was found to be 565 fms., with a mean bottom temperature, taken from soundings, of 47° F.

The excellent results obtained in these tests were all the more gratifying since they offered further proof of the stability of the joint between the india-rubber and gutta-percha cores of the two pieces of Heavy Intermediate laid off St. Louis. Tests taken towards the break placed this at about 30 miles from the ship.

The cable was then cut, the St. Louis End buoyed, and we commenced picking up towards the break. At 6.30 p.m. on January 31st, and in about 1200 fms., the broken end came on board, the actual length picked up being 25·01 n.m. The whole of this cable was found to be in perfect electrical condition, but for a short distance towards the end the cable appeared to have been subjected to considerable strain. About an inch of the conductor was exposed, the percha being broken short off with a smooth and even face.

The weather again became unfit for grappling work, so more soundings were taken. On February 2nd a Mark Buoy was put down in position for grappling for the cable on the Fernando side of the break, but the wind and sea were still too high to permit of further work.

On February 3rd, at 7.30 p.m., the grapnel was lowered in about 1280 fms., and on February 4th, at 3 a.m., the cable was at the bows. After cutting, Fernando was called and spoken, and I would here say a word for the very excellent watch kept by Mr. Anstruther at that

station. Tests were taken by ship and shore, and the cable was found perfect.

The cable was then cut, and the Fernando End buoyed, and picking up Northwards to the break was commenced.

No satisfactory tests for ascertaining the distance to the break could be obtained, the nearest approximation we could get being evidently unreliable.

At 6.45 p.m. on February 4th, in 1220 fathoms, the broken end came on board. For some distance at the end the cable had undergone a very considerable strain, and the covering was much torn, in many places completely stripped off, with the sheathing wires brightly polished.

The conductor at the broken end could be scarcely seen; it was almost completely covered by the core, which was much bruised and squeezed over it.

The actual length recovered south of the break was 20.57 N.M., and this portion of the picked up cable, except an inconsiderable length which had suffered mechanical damage, tested perfectly. It was evident, from the lengths picked up, and the position of the ship when the broken ends came in-board, that the whole of the cable on both sides of the break had been recovered.

It was found necessary to take more soundings; meanwhile the recovered cable was turned over and spliced up to the cable on board.

On February 6th we returned to the buoy on the Fernando End, and at 1.30 P.M. we had the cable on board. After picking up 1.25 N.M. towards Fernando, to avoid the possibility of any kink existing on the end which had been buoyed, further tests were made. The cable gave an insulation per N.M. of 13756 megohms, at a calculated mean bottom temperature of 34° F., with a conductor resistance of 4.8848 ohms per N.M. The mean depth was taken as 2142 fathoms, with a mean bottom temperature, from soundings, of 35° F. The distance from this point to Fernando was 1567.4 N.M.

In speaking Fernando through this length the ship used 18 Leclanché cells without any condenser in circuit either on receiving or sending side. The signals were extraordinarily good at both ends. After splicing on the cable on board—about 136 N.M., we found it necessary, both for sending and receiving, to use a condenser capacity

of 100 microfarads; 12 Leclanché cells were found sufficient for sending.

At 7.40 P.M. (February 6th) the splice between the cable on board and the Fernando End having been made, we started paying out towards the buoy on the St. Louis End. At 8.46 A.M., on February 7th, we were up to this buoy. We then picked up 0.25 N.M. on the St. Louis End, so as to make certain no kink had been put into the cable when buoying, and the tests on both sides being perfectly satisfactory, the final joint and splice were made, and at 4.0 P.M. the final bight was let go, and the repairs completed.

The picked up cable consisted entirely of Sec. "10," Light Deep Sea, Factory No. 2147, and was composed of:—

On St. Louis side of break .. .. .	25.01 N.M.
" " " " .. .. .	0.25 "
„ Fernando „ „ .. .. .	20.57 "
	1.25 "
	<hr/>
	47.08 N.M.
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The cable laid in the repairs consisted of:—

Sec. "10," Light Deep Sea, Factory No. 2147 39.650 N.M. recovered cable.

„ "9B" " " " " „	21.3792 „	new cable.
„ "5" " " " " „	12.5728 „	" " "
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	73.6020 N.M.	
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The length of Section after repairs was increased by 26.522 N.M., the original length being 1702.147 N.M., and the present length 1728.669 N.M.

Some slight alterations in the mean depth and mean bottom temperature have necessarily occurred.

	Mean Depth.	Mean Bottom Temp.
The original Section =	2172	34°.9
The Section after repairs=	2142	35°.2

The mean depth along the route of cable laid in the repairs I have taken at 1258 fms. with a mean bottom temperature of 38°.5 F.

It is a matter of great satisfaction that not only were the tests taken by Mr. Cronch at St. Louis, after the repairs, excellent from every

point of view, but they actually gave a considerably higher dielectric resistance (with far more regular readings) than was observed on the occasion of the final guarantee tests taken at Fernando on September 16th, 1892, after the completion of the Section and on the expiration of the period of guarantee. It must be remarked that the earth currents which so much affected the tests taken at Fernando were on the occasion of Mr. Crouch's tests at St Louis very steady and of little strength.

I have little more to add, beyond an explanation of certain of the Tables appended to this Report.

TABLE A, page 713, gives a detailed sub-division of lengths of cable, with corresponding depths and bottom temperatures, between St. Louis and the cut north of break.

TABLE B, same page, gives like information for the cable laid during the repairs.

TABLE C, page 714, shows the sub-division of the whole Section into various portions, giving for each the length of cable with the corresponding depths, bottom temperatures and  $75^{\circ}$  values. In this table you will also find a calculation of what the cable values should be at the observed bottom temperatures, the  $75^{\circ}$  values being taken as a basis.

TABLE D, page 722.—This Table gives a comparison between actual tests taken at various periods and on different portions of the Section, and the estimated values of the same portions at the corresponding bottom temperatures, the  $75^{\circ}$  values being taken as a basis.

These particular Tables have been drawn up with considerable detail, so as to facilitate calculations in any future repairs which may take place.

The remaining Tables fully explain themselves, and require no especial comment.

I remain, Sir,

Very faithfully yours,

E. MARCH WEBB,

Chief Electrician.



LENGTHS, TYPES, AND 75°s OF CABLE  
SHIPPED ON BOARD S.S. "DACIA"  
OFF WORKS.

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VALUES AT 75°s OF CABLE AS SPLICED UP  
PRIOR TO REPAIRS.

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TESTS ON CABLE ON BOARD S.S. "DACIA."





# SOUTH AMERICAN CABLE REPAIRS.

75's OF CABLE SHIPPED ON BOARD S.S. "DACIA" AT WORKS, 1893.

TANK.	DESCRIPTION.			LENGTH.	C.R.		IND. CAP.		D.R.		REMARKS.	
	SEC.	TYPE.	FACTORY No.		COBE.	TOTAL.	PER N.M.	TOTAL.	PER N.M.	ABS.		PER N.M.
After	"A B"	L. D. S.	2147	225/ 225 G.P.	*21·3932	113·6904	5·3143	7·5782	·3543	25·44	544·6	South American, 1892.
Main	"5"	L. D. S.	"	225/ 225 G.P.	74·890	398·364	5·3192	26·994	·3604	11·27	844·0	" "
					96·2832	512·0544	5·3182	34·5722	0·35907	7·81	752·0	

\* 14 fms. were cut off for splice with Sec. "5."

After	"5"	S. E.	....	225/ 225 G.P.	5·0	26·596	5·3192	1·802	·3604	168·8	844·0	South American, 1892, part of Sec. "5" re- sheathed, 1893.
After	"9"	L. D. S.	2083	225/ 225 I.R.	5·393	29·142	5·404	1·9622	·3638	664·7	3585·0	South American, 1892.
After	"7"	L. D. S.	1177	107/ 140 G.P.	11·7125	185·42	11·56	....	....	37·308	436·9	First West African, 1892.

# VALUES AT 75°s F. OF CABLE AS SPLICED UP AND COILED IN AFTER MAIN TANK.

S.S. "DACIA."

*Prior to Repairs.*

	DESCRIPTION.				LENGTH.	C.R.		IND. CAP.		D.R.	
	SEC.	TYPE.	FACTORY No.	CORE.		TOTAL.	PER N.M.	TOTAL.	PER N.M.	TOTAL.	PER N.M.
Cable brought out from works	"9B"	L.D.S.	2147	225/ G.P.	74·8900	398·364	5·3192	26·994	0·3604	11·27	844·0
" " " "	"5"	"	"	"	21·3792	113·616	5·3143	7·5731	0·3543	25·515	544·6
Totals	..	..	..	..	96·2692	511·980	5·3182	34·5672	0·3595	7·82	753·0
Cable picked up Jan. 30 to 31	"10"	L.D.S.	2147	225/ G.P.	23·740	126·500	5·3279	8·5898	0·3618	33·19	788·0
Totals	..	..	..	..	120·0112	638·480	5·3202	43·1563	0·3596	6·333	760·0
Cable picked up Feb. 4	"10"	L.D.S.	2147	225/ G.P.	16·1960	86·355	5·3319	5·7859	0·35724	49·642	804·0
Grand Total	..	..	..	..	136·2072	724·835	5·3215	43·8427	0·35859	5·617	765·07

TESTS ON CABLE SHIPPED AT SILVERTOWN.

	LENGTH. N.M.	C.R.		TEMP.		D.R.	
		TOTAL.	PER N.M.	OBSD.	CALCD.	ABS.	PER N.M. RED. TO 75°.
Sec. "9B," Light Deep Sea, Factory No. 2147	21·4072	108·985	5·0909	56°·0	54°·5	368·75	7893·8 1260·0
Sec. "5," Light Deep Sea, Factory No. 2147	74·890	383·77	5·1245	56°·0	57°·0	87·122	6524·0 1303·0
Above Sections when Spliced together	96·2832	501·22	5·205	63°·5	64°·75	42·7	4116·0 1645·0

TESTS ON CABLE SHIPPED AT SILVERTOWN, AND CABLE PICKED UP WHEN SPLICED TOGETHER.

	LENGTH. N.M.	C.R.		TEMP.		D.R.	
		TOTAL.	PER N.M.	OBSD.	CALCD.	ABS.	PER N.M. RED. TO 75°.
Pt. Sec. "9B"    ..    ..    ..	136·2072	714·0	5·2421	67°·5	68°·0	21·924	2986·1 1596·2
"    "5"    ..    ..    ..							
"    "10"    ..    ..    ..							
(All Light Deep Sea, Factory No. 2147.)							



DETAILS OF ALTERATIONS OF LENGTHS  
IN THE ST. LOUIS—FERNANDO NORONHA  
SECTION.

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ROUGH DIAGRAM SHOWING REPAIRS.

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TABLE SHOWING APPROXIMATE POSITIONS  
OF CABLE LAID DURING REPAIRS.



# DETAILS OF ALTERATION OF LENGTHS EFFECTED IN THE REPAIRS TO THE FERNANDO NORONHA-ST. LOUIS SECTION.

Original length .....	N.M. = 1702·147		
Picked up on St. Louis side of break .....	= 25·260	....	Composed of Sec. "10," Piece "1" = $\begin{matrix} \text{N.M.} \\ 25\cdot01 \text{ .... January 30 \& 31.} \\ 0\cdot25 \text{ .... February 7.} \\ \hline 25\cdot26 \end{matrix}$
Picked up on Fernando side of break .....	<u>1676·887</u> = 21·820	....	Composed of Sec. "10," Piece "2" = $\begin{matrix} 20\cdot57 \text{ .... February 4.} \\ 1\cdot25 \text{ .... February 6.} \\ \hline 21\cdot82 \end{matrix}$
Total length of original cable remaining .....	= 1655·067	....	Length of original section remaining on St. Louis side is fixed by C.R. and null method on board, and by Cap. and null method on shore.
Left on St. Louis side of break .....	= 87·638		
Left on Fernando side of break .....	<u>1567·429</u>		
Old cable relaid .....	= 39·650	....	$\begin{matrix} \text{N.M.} \\ \text{Piece "1" = 23\cdot59} \\ \text{Piece "2" = 16\cdot06} \end{matrix} \left. \vphantom{\begin{matrix} \text{N.M.} \\ \text{Piece "1" = 23\cdot59} \\ \text{Piece "2" = 16\cdot06} \end{matrix}} \right\} \text{Taken from paying-out drum lengths.}$
New cable laid .....	= 33·952	....	$\begin{matrix} \text{Sec. "9" = 21\cdot3792} \\ \text{Sec. "5" = 12\cdot5728} \end{matrix}$
Total cable laid in repairs .....	= 73·602		$\begin{matrix} \text{N.M.} \\ \text{Present cable .....} = 1728\cdot669 \end{matrix}$
Original cable remaining .....	= 1655·067		Original cable..... = 1702·147
Total in present cable.....	<u>1728·669</u>		Excess of present length = <u>26·522</u>

# DETAILS OF ALTERATION OF LENGTHS EFFECTED IN THE REPAIRS TO THE FERNANDO NORONHA—ST. LOUIS SECTION—*contd.*

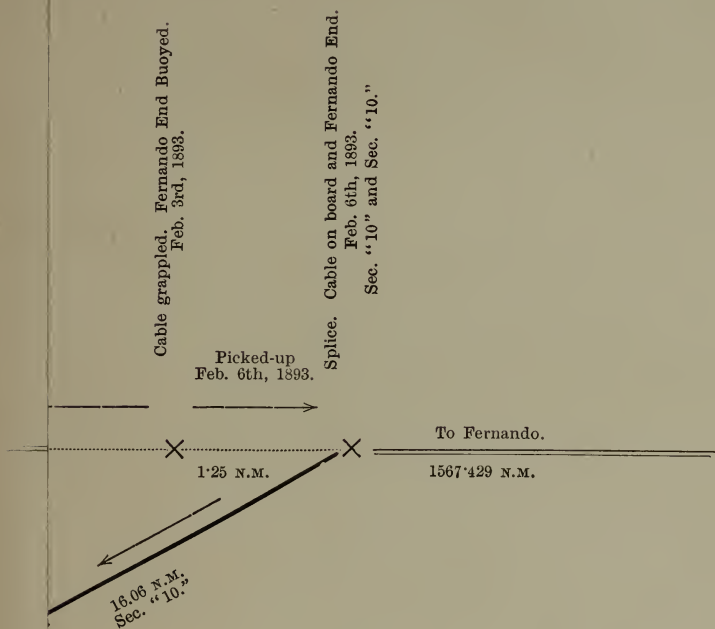
	N.M.	N.M.	
Relaid in repairs (total)	=	73·602	$\left\{ \begin{array}{l} 23\cdot59 \dots \text{Piece "1," Sec. "10."} \\ 16\cdot06 \dots \text{Piece "2," Sec. "10."} \\ 21\cdot3792 \dots \text{Piece "9,"} \\ 12\cdot5728 \dots \text{Sec. "5,"} \\ 25\cdot260 \dots \text{Piece "1," Sec. "10."} \\ 21\cdot820 \dots \text{Piece "2," Sec. "10."} \end{array} \right.$
Picked up prior to repairs (total)	=	47·080	
Excess of present length	=	<u>26·522</u>	

## SUMMARY.

St. Louis side	=	87·6380	...	Original cable.
		12·5728	...	Part Sec. "5," new cable.
		21·3792	...	Part Sec. "9," new cable.
Repairs	=	23·5900	...	Part Sec. "1," Sec. "10," picked-up cable relaid.
		16·0600	...	Part Sec. "2," Sec. "10," picked-up cable relaid.
Fernando side	=	1567·4290	...	Original cable.
		<u>1728·6690</u>		



# LOUIS SECTION.



# DETAILS OF ALTERATION OF LENGTHS EFFECTED IN THE REPAIRS TO THE FERNANDO NORONHA—ST. LOUIS SECTION—*contd.*

	N.M.	N.M.
Relaid in repairs (total) .....	=	73·602 ....
Picked up prior to repairs (total) .....	=	47·080 ....
Excess of present length .....	=	<u>26·522</u>

	N.M.	
	{	Piece "1," Sec. "10."
	23·59	.... Piece "2," Sec. "10."
	16·06	.... Piece "9,"
	21·3792	.... Sec. "5,"
	12·5728	.... Piece "1," Sec. "10."
	25·260	.... Piece "2," Sec. "10."
	21·820	....

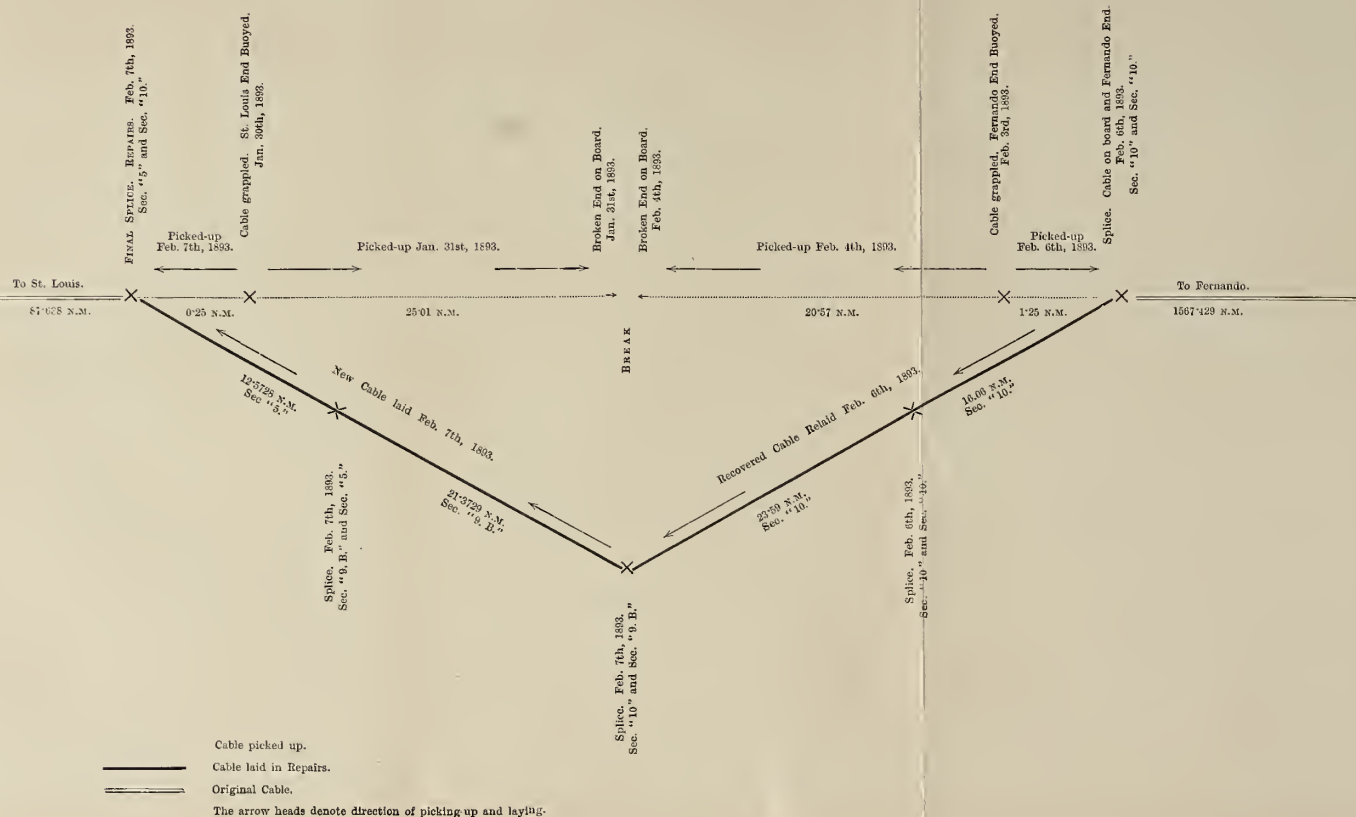
## SUMMARY.

St. Louis side .....	=	87·6380 ....	Original cable.
Repairs .....	=	12 5728 ....	Part Sec. "5," new cable.
		21·3792 ....	Part Sec. "9," new cable.
		23·5900 ....	Part Sec. "1," Sec. "10," picked-up cable relaid.
		16·0600 ....	Part Sec. "2," Sec. "10," picked-up cable relaid.
Fernando side .....	=	1567·4290 ....	Original cable.
		<u>1728·6690</u>	

## ROUGH DIAGRAM SHEWING REPAIRS TO THE FERNANDO NORONHA—ST. LOUIS SECTION.

S.S. "DACIA,"

Jan. and Feb., 1893.





# FERNANDO NORONHO—ST. LOUIS SECTION.—REPAIRS.

TABLE SHEWING APPROXIMATE POSITIONS OF CABLE LAID IN THE REPAIRS, WITH DISTANCES OVERGROUND, AND LENGTHS OF CABLE LAID BETWEEN SAID POSITIONS.

Date.	Time.	Position.		Total Distances,		Distances between Positions.		Slack per cent.		Depth.	
		Lat. N.	Long. W.	Over-ground.	Cable laid.	Over-ground.	Cable laid.	Between positions.	Total.		
1893. Feb. 6	P.M. 7.42	15° 0' 2	18° 7' 1	..	..	..	..	..	..	1280	Splice Fernando End with Cable o/b. Splice Sec "10" and Sec. "10."
"	11.0	15° 8' 8	18° 12' 3	10.0	16.06	..	..	..	..	1400	Splice Sec. "10" and Sec. "10."
"	MIDN.T.	15° 12' 7	18° 14' 5	14.4	21.7	14.4	21.7 {	50.69 50.69	50.69 50.69	1450	Change of course "F."
Feb. 7	A.M. 2.30	15° 24' 45	18° 10' 55	26.75	36.4	12.35	14.7	18.5	36.5	1340	Change of course "E."
"	3.3	15° 25'	18° 7' 6	29.4	39.65	..	..	..	..	1330	Splice Sec. "10" and Sec. "9 B."
"	4.0	15° 25' 9	18° 5'	34.3	43.5	7.4	..	..	..	1300	
"	6.47	15° 30' 3	17° 50' 4	47.2	61.0292	..	..	..	..	1050	Splice Sec. "9 B" and Sec. "5"
"	8.0	15° 30' 95	17° 16' 3	51.0	67.2	24.5	30.8	27.2	31.7	890	Change of course "J."
"	8.30	15° 32' 7	17° 43' 3	54.35	70.2	..	..	..	..	850	Change of course "D."
"	8.52	15° 34' 2	17° 41' 9	56.35	72.3	..	..	..	..	860	Change of course.
"	P.M. 4.0	15° 34' 5	17° 41' 5	56.85	73.002	5.85	6.4	9.4	29.4	860	Final splice. St. Louis-- Fernando Ends. Splice Sec. "5" and Sec. "10."



CABLE LENGTHS, WITH CORRESPONDING  
DEPTHS AND TEMPERATURES.

TABLES A. AND B.

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SUB-DIVISION OF SECTION AFTER REPAIRS.

TABLE C.





# LENGTHS, DEPTHS, AND TEMPERATURES.

## ST. LOUIS END.

TABLE A.

Lengths, Depths, and observed Bottom Temperatures from cut north of break to St. Louis.

N.M.	FMS.	FHR.
6	7	66°·0 S. End St. Louis.
5	25	62°·0
16	260	53°·0
13·8	500	47°·0
4	700	41°·0
28	800	40°·5
15	880	40°·3 Buoyed End.
<hr/>	<hr/>	<hr/>
87·8	565	46°·75
<hr/>	<hr/>	<hr/>

TABLE B.

Lengths, Depths, and observed Bottom Temperatures along the route of Cable laid during repairs between the cut on Fernando side of break and the cut on St. Louis side.

N.M.	FMS.	FHR.
4·6	860	40°·3 St. Louis End.
6	970	39°·7
18	1175	38°·8
8	1323	37°·4
16	1395	37°·0
5	1425	37°·0
16	1340	37°·4 Fernando End.
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73·6	1258	38°·5
<hr/>	<hr/>	<hr/>

# SUB-DIVISION OF SECTION.

TABLE C.

SHEWING LENGTHS OF CABLE WITH CORRESPONDING DEPTHS AND TEMPERATURES WITH ELECTRICAL  
VALUES AT 75° F., AND REDUCED TO OBSERVED BOTTOM TEMPERATURES.

Mean Depth.	Mean observed Bottom Temps. from Sound- ings.	Cable Lengths.			C.R. at 75° F.		Ind. Cap. at 75° F.		D.R. at 75° F.		Values at observed Bottom Temperatures Calculated from Values at 75° F.			
		Corres- ponding to Depths and Temps.	Composed of		Total.	Pr. N.M.	Total.	Pr. N.M.	Total.	Pr. N.M.	C.R.		D.R.	
			Types.	Sections.							Total.	Pr. N.M.	Total.	Pr. N.M.
25	72°·0	3·0	{ S.E. H.I. L.I.	{ "3A" "4B" "4C"	15·9884	5·3306	1·0450	0·3483	162·1000	486·4	15·895	5·2984	212·01	636·04
350	49°·0	3·0	{ L.I. H.D.S. L.D.S.	{ "4C" "1" "5"	15·9797	5·3264	1·0583	0·3519	195·9000	587·1	15·134	5·0447	2006·1	6018·3
1600	36°·5	20·0	L.D.S.	"5"	106·2700	5·3136	1·0983	0·3549	42·6500	853·0	98·262	4·9131	1336·5	26730·0
2286	34°·23	1085·0	{ L.D.S. " " " " " "	{ "5" "6" "7" "10" "9A" "11A" "7A" "5A"	5772·0200	5·3198	398·8137	0·3593	0·7127	773·3	5300·5	4·8853	27·914	29636·0

Calc. C.R. = 7658·761  
Obsd. C.R. = 7656·6 and 7647·0.

2538	33° 48	300·0	{ L.D.S. " " " }	{ "5A" "11B" "7" }	{ 80·772 143·828 75·400 }	1595·1703	5·3172	106·1352	0·3539	2·2950	688·5	1462·6	4·8753	94·060	37218·0	Obsd. C.R. = 7656·6 and 7647·0 Calc. C.R. = 7658·761		
1775	35° 77	156·429	{ L.D.S. " "	{ "7B" "10" }	{ 139·059 17·370 }	831·9280	5·3182	56·2431	0·35954	5·1980	813·12	766·37	4·8992	174·19	27248·0			
1258	38° 5	73·602	{ L.D.S. " " " "	{ "10" " " "9B" "5" }	{ 16·060 23·590 21·3792 12·5728 }	391·7100	5·3220	26·4968	0·35838	9·6190	707·98	362·92	4·9309	230·46	16962·0	Obsd. C.R. = 442·4 Calc. C.R. = 443·25		
565	46° 75	87·638	{ L.D.S. " " " " H.D.S. L.I. H.I. H.I. S.E. }	{ "10" "9B" " " "1" "4C" "4B" "4A" "4" }	{ 15·060 27·877 3·804 13·030 15·990 4·992 2·885 4·000 }	470·2226	5·3655	31·3444	0·35756	7·4500	652·90	413·25	5·0578	93·305	8177·0			
2142	35·19	1728·609	—	—	—	9199·290	5·3215	619·2323	0·3582	0·4340	750·0	8465·69	4·8972	13·51	23353·0	Calculated Temps. = 350·25		
Actual Tests =															8480	8·3958	4·9055	14514·0 = 36° 0



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TABLE OF 75°s, WITH LENGTHS, DEPTHS,  
AND BOTTOM TEMPERATURES AND  
POSITIONS OF SPLICES.

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TO

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S.S. 6

lengths.

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# REPAIRS TO ST. LOUIS—FERNANDO NORONHA SECTION.

VALUES AT 75° F., POSITIONS OF SPLICES, LENGTHS, BOTTOM TEMPS., AND OTHER DATA.

LAI'D BY S.S. "SILVERTOWN," 1892. REPAIRED BY S.S. "DACIA," 1893.

Dates of Laying.	Positions of Splices.		Depths.	Bottom Temps. from Soundings.	Types.	Sections.	Factory Run-ins.	Lengths.	Order of Coils.	C.R.		Ind. Cap.		D.R.		Remarks.	Splices. When and where made.
	Latitude S.	Longitude W.								Total.	Per N.M.	Total.	Per N.M.	Abs.	Per N.M.		
FERNANDO END	3 50-0	32 25-2	...	...	...	...	...	...	...	...	...	...	...	...	...	PORTION OF FERNANDO HUT.	
	3 49-68	32 25-52	...	...	...	...	...	...	...	...	...	...	...	...	...	† S.S. "Silvertown," Aug. 31, 1892.	
1892.																	
Aug. 31	...	...	9	79-0	S.E.	"3a"	2161	1-500	pt. 434	7-9670	5-3120	0-5161	0-3441	259-0	389-0		
	3 48-73	32 25-68	30	70-0	...	...	...	...	...	...	...	...	...	...	...	Splice S.E. and H.I.	Factory. April 11, 1892.
	...	...	...	...	H.I.	pt. "48"	2150	0-990	{ pt. 688 pt. 689 }	5-2918	5-3440	0-3520	0-3555	671-0	663-0		
	3 47-7	32 25-7	50	68-0	...	...	...	...	...	...	...	...	...	...	...	" H.I. and L.I.	" " " "
	...	...	...	...	L.I.	pt. "40"	2149	1-400	{ pt. 714 pt. 548 }	7-9737	5-3520	0-5218	0-3503	419-0	624-0		
	3 46-6	32 24-9	250	45-0	...	...	...	...	...	...	...	...	...	...	...	" L.I. and H.D.S.	" " " "
	...	...	...	...	H.D.S.	pt. "1"	2148	1-990	{ pt. 143 pt. 548 }	5-750	5-3130	0-6990	0-3518	283-0	563-0		
	3 45-2	32 23-8	950	38-5	...	...	...	...	...	...	...	...	...	...	...	" H.D.S. and L.D.S.	" " 10 "
" & Sept. 1	...	...	...	...	L.D.S.	pt. "5"	2147	145-662	{ pt. 296 11 }	773-9320	6-3136	52-6545	0-3514	5-858	853-0		
	2 2-9	31 2-9	2500	33-75	...	...	...	...	...	...	...	...	...	...	...	" L.D.S. and L.D.S.	" Feb. 15 "
Sept. 1, 2, & 3	N.	W.	...	...	L.D.S.	"6"	2147	238-270	{ pt. 470 8 }	1256-7100	5-3190	85-5305	0-3520	3-459	817-0		
	0 18-1	28 26-3	1900	35-6	...	...	...	...	...	...	...	...	...	...	...	" " "	" " 17 "
	...	...	...	...	L.D.S.	pt. "7"	2147	5-846	{ 534 517 }	31-1327	6-3233	2-0500	0-3558	88-65	519-0		
	0 22-7	28 23-0	2000	35-0	...	...	...	...	...	...	...	...	...	...	...	" " "	" " 18 "
	...	...	...	...	L.D.S.	pt. "10"	2147	26-537	{ pt. 489 500 }	140-7276	5-3031	9-6132	0-3523	28-06	745-0		
	0 42-0	28 8-0	1900	35-6	...	...	...	...	...	...	...	...	...	...	...	" " "	" " " "
" & 4	...	...	...	...	L.D.S.	"9a"	2147	234-879	{ 53 486 }	1251-2700	5-3273	84-6880	0-3506	3-302	774-0		
	3 40-4	26 6-6	2250	34-25	...	...	...	...	...	...	...	...	...	...	...	" " "	" " 15 "
" 4 & 6	...	...	...	...	L.D.S.	"11a"	2147	232-190	{ 23 pt. 481 }	1234-1053	5-3148	83-8879	0-3512	3-408	791-0		
	6-28-6	23 54-5	2300	34-20	...	...	...	...	...	...	...	...	...	...	...	Changed Tanks, "Silvertown," Sept. 5, 1892.	"Silvertown," Sept. 4, 1892.
" 5 & 8	...	...	...	...	L.D.S.	"7a"	2147	160-294	{ pt. 529 pt. 715 }	833-7291	5-3260	56-0655	0-3498	4-339	693-0	Splice L.D.S. and L.D.S.	Factory. April 12, 1892.
	8 26-7	22 32-3	2450	34-0	...	...	...	...	...	...	...	...	...	...	...	" " "	" " 6 "
" 6 & 7	...	...	...	...	L.D.S.	"5a"	2147	144-115	{ 476 705 }	765-770	5-3140	50-5263	0-3507	4-780	680-0		
	10 16-7	21 18-7	2750	33-25	...	...	...	...	...	...	...	...	...	...	...	" " "	" " 4 "
" 7	...	...	...	...	L.D.S.	"11b"	2147	143-828	{ 503 668 }	765-2700	5-3207	50-6478	0-3521	4-500	646-0		
	12 7-1	20 6-4	2600	33-5	...	...	...	...	...	...	...	...	...	...	...	" " "	" " March 29 "
" 7 & 8	...	...	...	...	L.D.S.	pt. "7a"	2147	214-459	{ 7 pt. 617 }	1140-4000	5-3175	77-4181	0-3510	3-708	735-0		
	14 46-3	18 16-2	1500	36-75	...	...	...	...	...	...	...	...	...	...	...	" " "	" " "
" 8	...	...	...	...	L.D.S.	pt. "10"	2147	17-370	{ 242 pt. 631 }	92-4780	5-3240	6-1671	0-3510	48-72	846-0		
1893.																	
Feb. 6	15 0-2	18 7-1	1280	37-6	...	...	...	...	...	...	...	...	...	...	...	Splice L.D.S. and L.D.S. "Dacia," Feb. 6, 1893.	"Dacia," Feb. 6, 1893.
" "	...	...	...	...	L.D.S.	pt. "10"	2147	18-060	{ 389 pt. 355 }	85-6030	5-3250	5-7449	0-3577	46-40	745-0		
" "	15 8-8	18 12-3	1400	37-0	...	...	...	...	...	...	...	...	...	...	...	" " "	" " 5 "
" & 7	...	...	...	...	L.D.S.	pt. "10"	2147	23-590	{ 1443 pt. 407 }	125-7130	5-3200	8-8474	0-3585	35-30	833-0		
" 7	15 25-0	18 7-6	1330	37-4	...	...	...	...	...	...	...	...	...	...	...	" " "	Jan. 31 "
	...	...	...	...	L.D.S.	pt. "9a"	2147	21-3792	{ pt. 524 pt. 555 }	113-6160	5-3143	7-5732	0-3548	25-515	545-0		
" "	15 30-3	17 50-4	1050	39-3	...	...	...	...	...	...	...	...	...	...	...	" " "	" " 17 "
" "	...	...	...	...	L.D.S.	pt. "5"	2147	12-5728	?	66-879	5-3192	4-5313	0-3804	67-13	844-0		
1892.																	
Sept. 8	15 34-5	17 41-5	860	40-3	...	...	...	...	...	...	...	...	...	...	...	FINAL SPLICE "Dacia," Feb. 7, 1893. L.D.S. and L.D.S.	" Feb. 7 "
	...	...	...	...	L.D.S.	pt. "10"	2147	15-060	{ pt. 455 pt. 489 }	80-1530	5-3220	5-5175	0-3564	48-48	730-0		
" & 9	15 41-2	17 29-6	900	40-0	...	...	...	...	...	...	...	...	...	...	...	Splice L.D.S. and L.D.S.	Factory. March 23, 1892.
	...	...	...	...	L.D.S.	pt. "9a"	2147	27-877	{ 488 pt. 524 }	148-0616	5-3114	9-9665	0-3575	19-955	556-0		
" 11	16 55-0	17 9-0	700	41-0	...	...	...	...	...	...	...	...	...	...	...	FINAL SPLICE "SILVERTOWN," Sept. 11, 1892. L.D.S. and L.D.S.	"Silvertown," Sept. 11, 1892.
	...	...	...	...	L.D.S.	pt. "9a"	2147	3-804	{ pt. 522 pt. 523 }	20-2230	6-3178	1-3448	0-3535	121-75	463-0		
	15 57-27	17 6-7	700	41-0	...	...	...	...	...	...	...	...	...	...	...	Splice "Silvertown," Sept. 11, 1892. H.D.S. and L.D.S.	" " " "
May 15 & 16	...	...	...	...	H.D.S.	pt. "11"	2148	13-530	{ pt. 544 478 }	69-3590	5-3230	4-6645	0-3581	45-25	590-0		
" 15	16 1-2	16 57-2	235	53-0	...	...	...	...	...	...	...	...	...	...	...	Splice L.I. and H.D.S.	Factory. April 21, 1892.
	...	...	...	...	L.I.	pt. "40"	2149	15-990	{ pt. 714 689 }	85-4120	5-3420	5-5616	0-3479	41-4	662-0		
" "	16 3-0	16 42-6	23	61-0	...	...	...	...	...	...	...	...	...	...	...	" H.I. and L.I.	"Silvertown," May 9, 1892.
" "	...	...	...	...	H.I.	pt. "4a"	2150	4-992	{ 827 pt. 688 }	26-5000	5-3260	1-7619	0-3530	129-2	645-0		
	16 3-1	16 37-6	21	62-0	...	...	...	...	...	...	...	...	...	...	...	Splice "Silvertown," May 15, 1892. H.I. India-rubber and H.I. Gutta-percha.	" " 15 "
Oct. 7 1891.	...	...	...	...	L.I.	pt. "4a"	*2051	2-885	{ pt. 2 pt. 6 }	16-9350	5-8700	1-0590	0-3572	2940-0	5884-0		
	16 3-0	16 34-8	9	65-0	...	...	...	...	...	...	...	...	...	...	...	Splice S.E. and H.I.	Factory. 1891.
" "	...	...	...	...	S.E.	pt. "4"	*2060	4-000	{ pt. 6 3 }	23-4800	6-8700	1-4687	0-3672	1262-0	5048-0		
St. Louis END	16 1-8	16 31-5	6	86-4	...	...	...	...	...	...	...	...	...	...	...	† S.S. "Silvertown," Oct. 7, 1891.	
	18 1-6	16 31-0	...	...	...	...	...	1728-669	...	8199-290	5-3215	819-2323	0-3582	0-4340	750-0	PORTION OF ST. LOUIS HUT.	

\* India-rubber Core.

† The following are Factory Splices omitted in Sec. "5" in above Table of 75°:—

BETWEEN SPLICES.	
Factory Lengths.	Paying out drum lengths.
2-155	2-155 Spliced on to "8a."
2-867	2-61
2-619	2-63
2-469	3-61 Lat. Splice paid out on approaching St. Louis End.
11-158	11-191



TESTS TAKEN AT VARIOUS PERIODS  
DURING REPAIRS.

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COMPARISON BETWEEN VARIOUS ACTUAL  
TESTS AND CALCULATED VALUES.

TABLE D.

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FINAL TESTS AFTER REPAIRS.



# REPAIRS TO THE FERNANDO NORONHA-ST. LOUIS SECTION.

## TESTS TAKEN AT DIFFERENT PERIODS DURING THE REPAIRS.

Date.	Length in circuit.	C.R. observed.		D.R. observed per n.m.			Mean Depths.	Temperatures.				
		Total.	Per n.m.	1st min.	5th min.	30th min.		Cable on Board.		Cable Laid.		
								Means.				
								Obsrd. Tanks.	Calc. Cable.	Obsrd. Bottom.	Calc. Cable.	
1893. Jan. 30 ...	87·888	442·0	5·03	9028·7	24828·0	...	565	...	...	47°·0	46°·75	Test on St. Louis End after grappling and prior to buoys.
Feb. 4 ...	1568·68	7656·6	4·8809	12452·0	78434·0	...	2160	...	...	35°·0	34°·0	Test on Fernando End after hooking cable and prior to buoys.
" 5 ...	136·2072	712·91	5·234	2806·0	3199·0	3998·9	...	67°·5	67°·0	...	...	Tests on cable on board.
" 6 ...	136·2072	714·0	5·2421	2986·1	...	...	...	67°·5	68°·0	...	...	Test on cable on board prior to splicing with Fernando End.
" 6 ...	1567·429	7647·0	4·8748	13756·0	89415·0	...	Mean Depth between splice St. Louis End and splice Fernando End = 1258 fms.	...	...	Mean Temp. from splice St. Louis End to splice Fernando End, 38°·5.	33°·75	Test on cable to Fernando prior to splicing to cable on board.
" 6 ...	1703·62	...	...	9621·8	25574·0	...		...	...		...	Test on cable on board and cable to Fernando after splicing.
" 7 ...	1703·62	...	...	11424·0	48553·0	...		...	...	...	...	...
" 7 ...	1640·936	...	...	12470·0	...	...	Mean Depth between splice St. Louis End and splice Fernando End = 1258 fms.	...	...	Mean Temp. from splice St. Louis End to splice Fernando End, 38°·5.	...	Test on cable to Fernando after cutting and prior to final splice.
" 7 ...	87·888	442·4	5·032	10019·0	...	...	865	...	...	47°·0	45°·0	Test on St. Louis End before cutting for final splice.
" 8 ...	1723·669	8480·0	4·9055	14514·0	61456·0	126330·0	2142	...	...	35°·5 35°·19	36°·0	Final Tests from St. Louis Hut after completion of repairs.

TABLE D.

## COMPARISON BETWEEN ACTUAL TESTS

TAKEN AT DIFFERENT PERIODS AND ON VARIOUS PORTIONS OF THE SECTION, AND THE ESTIMATED VALUES AT OBSERVED BOTTOM TEMPERATURES CALCULATED FROM THE 75° VALUES.

Dates of Tests.	Length in Circuit.		Observed Values.				Temperatures.		Estimated Values at Bottom Temps. calculated from Value at 75° F.			
	N.M.	Distant from	C.R.		D.R.		Calculated from C.R.	Mean observed from Soundings.	C.R.		D.R.	
			Total.	Per N.M.	Total.	Per N.M.			Total.	Per N.M.	Total.	Per N.M.
May 15, 1892	6-885	St. Louis	40-348	5-8603	1m. 953-0 5m. 2670-0	5565-0 18383-0	74°-25	70°-0	39-811	5-7823	907-09	6245-3
Sept. 11, 1892	40-897	St. Louis	211-3	5-1666	1m. 85-29 5m. 107-02	3488-0 4386-0	52°-5	54°-0	212-25	5-1890	118-37	4840-8
Jan. 30, 1893 and Feb. 6, 1893	87-638	St. Louis	442-4	5-0337	1m. 102-73 5m. 282-49	9028-7 24828-0	46°-5	47°-0	443-25	5-0578	93-305	8177-0
Sept. 11, 1892	1657-4518	Fernando	8080-0	4-8760	1m. 9-3502 5m. 38-0	15947-0 62983-0	33°-75	...	This test is not of much present value, as a considerable length included in it was afterwards cut out during "Dacia," repairs ... ..			
Feb. 6, 1893 ...	1567-429	Fernando	7656-6	4-8848	1m. 8-7692 5m. 57-0	13756-0 88414-7	34°-0	35°-0	7658-761	4-8917	16-96	26554-0
Sept. 16, 1892	1702-147	Taken at Fernando	8358-7	4-9100	1m. 8-5224 5m. 9-6308	14506-0 16393-0	36°-5 & 35-5	35°-0	8345-265	4-9029	13-76	23392-0
Feb. 8, 1893	1728-669	Taken at St. Louis	8480-0	4-9055	1m. 8-3958 5m. 35-551	14514-0 61456-0	36°-0	35°-5	8465-69	4-8972	13-51	23353-0

Test on St. Louis, S.E. and H.I. (India-rubber), prior to splicing up with cable on board "Silver-town."

Test on cable towards St. Louis after grappling, and prior to splicing up with cable on board "Silvertown," to complete Section. Original laying.

Test on cable towards St. Louis prior to making Final Splice with Fernando end in "Dacia," repairs.

Test on cable towards Fernando prior to making Final Splice, original laying, "Silvertown."

Test on Fernando end prior to splicing up with cable on board in "Dacia," repairs

Final guarantee test, taken at Fernando by Mr. Bent.

Final test after "Dacia," repairs, taken at St. Louis, by Mr. Crouch.

# FINAL TESTS ON FERNANDO NORONHA—ST. LOUIS SECTION.

— — —  
With Table showing comparison between the D R. taken after original completion and the D.R. after repairs.  
— — —

February 8th, 1893, St. Louis Hut.

— — —  
Length=1728·669 N.M.

C.R. observed. <i>w.</i>	Temp. calculated. F.	D.R. observed 1st min. <i>Ω.</i>
Total 8480·0	36°·0	Total = 8·3958
Per N.M. 4·9055		Per N.M. = 14514·0

D.R. OBSERVED (Megohms).

From 1st to 60th min.

	ZINC TO LINE.			CARBON TO LINE.		
	Mr. Crouch's Test of February, 1893.		Mr. Bent's Test after original lay- ing, Sep- tember 16, 1892.	Mr. Crouch's Test of February, 1893.		Mr. Bent's Test after original lay- ing, Sep- tember, 16, 1892.
	(Abs.)	Per N.M.	Per N.M.	(Abs.)	Per N.M.	Per N.M.
1 min.	(8·396)	14514·0	14506·0	(8·378)	14483·0	15469·0
5 "		61456·0	16393·0		59839·0	51515·0
10 "		68905·0	92464·0		81210·0	66780·0
15 "	(58·897)	101810·0	78734·0	(61·657)	106590·0	91061·0
20 "		117610·0	127870·0		119680·0	96137·0
30 "	(73·076)	126330·0	150250·0	(68·035)	117610·0	109280·0
40 "		151590·0	124350·0		145140·0	122660·0
45 "	(101·18)	174920·0	—	(98·651)	170540·0	—
50 "		194900·0	129160·0		213180·0	117850·0
60 "	(140·93)	243630·0	137640·0	(136·07)	235230·0	144240·0
	(Earth currents mode- rate and steady.)			(Earth currents mode- rate and steady.)		







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EXPENDITURE TABLE.

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# EXPENDITURE TABLE.

## RECOVERED CABLE.

LIGHT DEEP SEA, SECTION "10B," No. 2147.

Recovered.

Jan. 30	..	..	25·01	N.M.	(1).
Feb. 4	..	..	20·57	„	(2).
„ 6	..	..	1·25	„	(3) (E).
„ 7	..	..	0·25	„	(4) (F).

47·08 N.M.

Laid in Repairs (Piece 1) (Feb. 6)	..	..	23·5900	N.M.
„ „ „ ( „ 2) ( „ )	..	..	16·0600	„
Cut off for splices (Feb. 5)	..	..	0·0140	„
„ „ damaged ends	..	..	0·0150	„
„ „ mechanically bad, much chafed, &c.			1·4830	„

(Piece C).

Slightly screwy, but otherwise good.				N.M.
A. Coiled down in fore tank	..	..	..	0·2132
B. „ „ „ „	..	..	..	1·0408
D. „ „ „ „	..	..	..	2·8910
E. „ „ in fore main tank (3).	..	..	..	1·2500
F. „ „ „ „ „ (4).	..	..	..	0·2500
				<u>5·6450</u> „
				46·8070 „
Unaccounted for				0·2730 „
				<u>47·0800</u> „

NOTE.—Of the above recovered cable, 2·628 N.M. were landed at Dakar, St. Louis, and at Tejita, for underground land line work.

# EXPENDITURE TABLE—*contd.*

## CABLE SHIPPED AT WORKS.

Light Deep Sea, Sec. "9B."	N.M.	N.M.
Factory No. 2147 Cut off for splices. (Jan. 16 & 31)	0·0280	
Length=21·4072 N.M. Laid in repairs. (Feb. 6 & 7)	21·3792	
		<u>21·4072</u>

Light Deep Sea, Sec. "5."		
Factory No. 2147.		
Length= 74·8900 N.M. (Feb. 7). Laid in repairs ..	12·5728	
Remaining on board	62·3172	
		<u>74·8900</u>

## SUMMARY.

New cable on board .. ..	96·2972 N.M.
Recovered .. ..	47·0800 "
	<u>143·3772 "</u>

Laid in repairs.	New cable ..	33·9520 N.M.
Cut off for splices.	" "	0·0280 "
Remaining on board.	" "	62·3172 "
Laid in repairs. Recovered cable	..	39·6500 "
Cut off for splices.	" "	0·0140 "
" " damaged	" "	1·4980 "
Remaining on board	" "	5·6450 "
		<u>143·1042 "</u>
Unaccounted for ..	..	0·2730 "
		<u>143·3772 "</u>

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SUMMARY OF EVENTS.

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## SUMMARY OF EVENTS.

DATE.	TIME.	EVENTS.
1892. Dec. 28th.		"Dacia" taken up for South American repairs.
1893. Jan. 3rd. }		Crew and cable hands signed on.
" 4th. }		
" 5th.		"Dacia" left Victoria Dock for Albert Dock.
" 6th.		"Dacia" left Albert Dock for Greenhithe.
" 7th.	1.0 P.M.	"Dacia" left Greenhithe for sea.
" 16th.	9.30 A.M.	Arrived Tenerife.
" "	10.0 P.M.	Left "
" 21st.	9.15 A.M.	Arrived St. Louis.
" "	5.45 P.M.	Left " for sounding.
" 24th.	5.15 "	Arrived Dakar
" 25th.	7.45 A.M.	Left " for sounding.
" 26th.	1.0 P.M.	Put down Mark Buoy on St. Louis side of break.
" 27th.	9.20 "	Anchored off St. Louis. Bad weather having prevented any work.
" 29th.	8.30 "	Left St. Louis for grappling ground.
" 30th.	5.0 "	Grappling hooked cable. Buoyed St. Louis end.
" "	11.50 "	Commenced picking up Southwards towards break.

*Summary of Events.*

DATE.	TIME.	EVENTS.
1893.		
Jan. 31st.	6.15 P.M.	Broken end came on board—25.01 N.M. picked up.
Feb. 1st.		Sounding, and turning over recovered cable.
„ 2nd.		Sounding. Put Mark Buoy down on Fernando side of break.
„ 3rd.	10.30 „	Grappled and hooked cable.
„ 4th.	6.30 A.M.	Buoyed Fernando end. Commenced picking up northwards towards break.
„ „	6.45 P.M.	Broken end came on board 20.57 N.M. picked up.
„ 5th.		Sounding, and turning over recovered cable.
„ 6th.		Put lights on St. Louis Buoy.
„ „	1.30 „	Picked up Fernando buoyed end. Recovered 1.25 N.M. towards Fernando. Spliced Fernando end to cable on board.
„ „	7.42 „	Started paying out towards buoy on St. Louis end.
„ 7th.	9.15 A.M.	Up to buoy on St. Louis end. Recovered 0.25 N.M. towards St. Louis. Made final joint and splice.
„ „	4.15 P.M.	Slipped final bight; repairs completed. Set on for Dakar.
		Paid out new cable = 39.65 N.M.
		„ „ recovered cable = 33.952 „
		<u>73.602 N.M.</u>
„ 8th.		Anchored at Dakar. Reports of final tests very satisfactory.
„ 11th.		Left Dakar for St. Louis to repair the underground cables at that place.





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South American cables 1891-1892 : repai



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